

# COALAGE

*The World's Accepted Authority on Coal Mining*

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July 1, 1926

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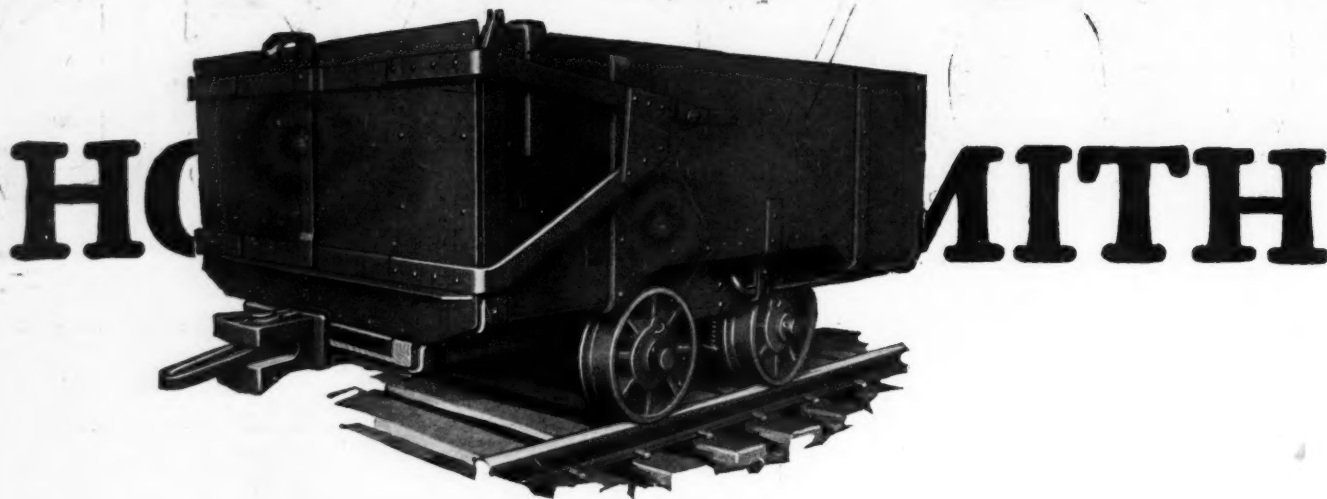
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Number 1

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## COAL AGE

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With which is consolidated "The Colliery Engineer" and "Mines and Minerals"  
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### Illinois Mining Institute

On the good ship *Cape Girardeau* sailing from the port of St. Louis, Mo., to the good city of Nauvoo in the State of Illinois, A. F. Brosky, assistant editor of *Coal Age*, set foot at the close of last week with the members of Illinois Mining Institute. What addresses were read and what discussion resulted will be told in next week's issue. The trip was 450 miles long and ended on Sunday morning. You will find the account of the meeting interesting reading. H. T. Bannister's paper on accidents will appear at length.

### What it Costs to Rock Dust

Charles Enzian will tell what is the cost of rock-dusting. The matter has been discussed quite vigorously, and those who purpose to protect their mines in this manner want to know just what it will cost them. Mr. Enzian presents the figures in a conservative manner.

### Write for Your Index

The indexes of *Coal Age* for the first half of the year will be ready in a few days and will be sent on application. These make it easy to find what articles have appeared on certain subjects whenever you desire to "book" yourself up on them. Every company office should save up its copies of *Coal Age* and provide itself with bound copies for ready reference.

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# COAL AGE

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Devoted to the Operating, Technical and Business  
Problems of the Coal-Mining Industry

R. Dawson Hall  
Engineering Editor

Volume 30

NEW YORK, JULY 1, 1926

Number 1

## Can We Not Only Dispatch but Schedule Trips?

**S**CHEDULING and dispatching are fundamentals in the control of production and important parts of efficient management. They make operation approach automaticity, one of the ideals of modern business life. An organization must necessarily run smoothly if labor is to be intelligently guided toward efficiency.

Railroads run their trains on a schedule and dispatch them so that they will maintain it. Large successful factories, particularly in the automotive industry schedule and dispatch the operations, processes and purchases of the numerous parts which go to make up an automobile. Compared with the coal operator's, theirs is a truly complex problem, but so necessary is it that certain parts shall not outrun the others in production that they carefully plan the operations of all the factory units so that each part arrives at a predetermined time ready for the complete assembly.

\* \* \*

Coal mining has a production and a transportation problem, for which a practical application of scheduling and dispatching might possibly offer a welcome solution. Why not investigate the manner in which passenger and freight trains are scheduled ahead of operation and dispatched to meet this schedule? Why not inquire how the automobile factory determines its operations months ahead and schedules every process for every part of this period and then by careful dispatching ascertains and directs that this schedule shall be maintained.

*Coal Age* in this issue describes two dispatching methods of the Consolidation Coal Co., one of which is hampered by the fact that the telephone cannot be used. But is dispatching enough? May we not well start our scheduling at the face.

\* \* \*

Let it not be disguised that there are difficulties. Distances are changing. The face is moving further and further from the sidetracks or the latter are being moved a greater distance from the tippie or the shaft bottom. Miners absent themselves from their places and many go home early. Places are left uncut at night for many reasons, and gas, squeezes and rock falls sometimes make it necessary temporarily to shut down a place.

But scheduling trips would make the miner feel a responsibility of which he has been deprived by many years of catch-as-catch-can methods. As soon as he sees that he is an integral part of a well-ordered movement he will realize his responsibility and he will find that he gets more cars and knows just how often and when he will get them, and to a degree at least he will order himself accordingly.

During many years cars could be bought of the driver for a lampful of oil, a pipeful of tobacco or a schooner of beer. The union broke up that practice by compelling the equal turn. This was in itself an injustice. All any man is entitled to is an equal opportunity to get cars at regular periods. Doubtless the miner and the union can be made to realize this. With such an assurance the loader can regulate his work so as to have his face in proper condition at all times for loading and properly protected by props. Of course, some men load more than others, and one large company arranges room widths with that end in view, requiring each man, not to load an equal tonnage, but to load out his cut completely every evening.

\* \* \*

There is no reason why standard production cannot be attained at least in non-union mines by weeding out those who cannot or will not perform a proper day's work. For some special men, perhaps, the schedule can be slightly modified. They can be given their extra cars toward the close of the run. That is a matter for study, but it is likely that some kind of harmony can be attained.

The village band composed of mine workers submits to schedule and dispatching. Those great harmonists, Mozart, Brahms, Mendelssohn, Sousa and others have with great mastery given the schedule. Billy Jones, the bandmaster, does the dispatching, and the band affords a co-ordinated effort. Is it too much to think that in mines as in bands and in factories such scheduling and dispatching is impossible of achievement?

Scheduling at mines sounds like an incredible optimism, after these many years of irregular operation, but till it is tried one cannot with too great certainty deny the possibility of achievement. Mines never had a regular movement of trips with which the miner *could* synchronize. The mine worker has never been put on his mettle. The management has its responsibility for this as well as the men. Time studies are greatly needed. When the work is run on schedule, a degree of automatic adjustment will spread responsibility and make the duties of the management less burdensome.

\* \* \*

But the difficulties are not all with the mine worker. The management must arrange to eliminate wrecks, to remove the hindrances to haulage that make it impossible for some locomotives to keep up the schedule, to keep cutting machines and mechanical loaders, if they have them, in condition at all times, to supply adequate current and voltage whenever needed and to keep cars moving steadily under the tippie.

When there is a schedule there is a mark which the

foreman, the electrician, the locomotive runner, the dispatcher and the miner knows he must attain every day. He is able to see when he is slipping. He can gage his failure accurately, and he can concentrate on his problem. Today, he does not know what is wrong, because he has not set clearly in his mind what constitutes a proper performance of each task. The foremen of the Consolidation Coal Co. know how long it takes to go from one sidetrack to the next. In most mines neither time nor distance are known. Most foremen have never taken the trouble even to inquire.

Scheduling gives every one a new and continuing impulse, and coal-mine managements might well look to it as a means of improving their operating methods

### Once in a Brewery, Now in a Warehouse

**T**HE BUREAU OF MINES has moved from its up-to-date quarters in the Interior Building, Washington, and now is housed in a remodeled Civil War hospital and warehouse. The new home of the Bureau is known as the Winder Building. It is situated at Seventeenth and F streets, a block east of the former location. As the building will not house the entire Bureau an old store building next door is being rehabilitated to take care of the overflow.

The building was erected in 1848 as a hotel, but was rented by the government until 1854, when it was purchased for the use of the War Department. The record fails to show when the sea-going elevator was installed, but this encroachment of a device of a more modern age does not detract from the ancient appearance of the edifice.

The coal bins have been removed from the basement and the mimeographing section has been set up in surroundings which will portray Libby Prison to visiting mining men.

The lack of consideration of the mining industry on the part of the Public Buildings Commission in the assignment of this space, it is pointed out, does not depart far from the attitude of Congress itself. Once the Bureau had its headquarters in a brewery, now they are in a warehouse and hotel!

### Fair Road for Pedestrians

**C**ROOKED ROADS with opportunities to pass trips, now on one side of the entry, now on the other, are the cause of many accidents. When the fairway for pedestrians thus curves from rib to rib, and when, moreover, it is cluttered with fallen rock and coal, piles of rubbish and projecting ties, traveling mine workers will inevitably choose the center of the track, which where there are no rope and rollers, is immeasurably the better roadway.

Examiners, foremen, superintendents and managers invariably will follow the beaten track in the middle of the road, so what can be expected of the unofficial mine worker. He will accept the hazard of the broken and runaway trip and of the trolley wire and take the pathway between the rails. Give him a fairway at one side away from the electric wire, and he will follow it by preference. All of which presupposes a roof that will span a roadway wide enough to accommodate men and mine cars. A good light will be a further assistance. Too many operators ask too much of their

men and then wonder that they take risks. It is better practice to give them a clear roadway than to plaster a mine with safety admonitions, no matter how commendable is the latter practice.

### Managerial Enterprise

**I**N ALMOST every situation embodying employee and employer certain forces exist that can be made to operate together in the promotion of mutual understanding and good will. It sometimes requires much breadth of vision to comprehend these forces and skill to bring them into play, but it is surprising how effective they are and how favorable a situation can be created by a little managerial enterprise directed toward this end. The organization of the Old Timers' Association by the Union Pacific Coal Co. affords an illuminating example of what can be done where a keen appreciation exists of the services rendered to an organization by the workers who stick by their jobs year after year.

Steady employment is one angle of the industrial situation that has its commendable features, but steady service on the part of the employees deserves special recognition, for upon this is dependent in large measure the success of any management. Pride in an organization grows out of mutual understanding and respect. By recognizing the value of long-time service the Union Pacific Coal Co. has created a fine spirit of loyalty among its workers that smooths out many of the minor difficulties and also some of those major ones that seem to be inevitable in every industrial operation.

### Cheap Insurance

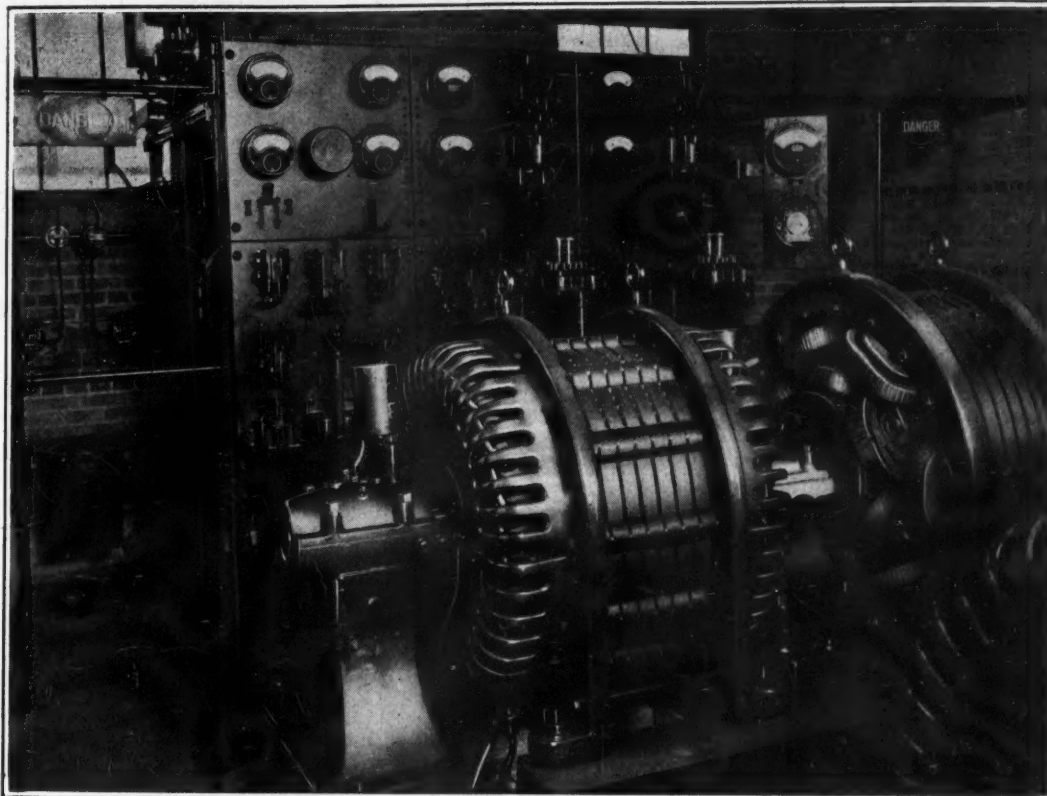
**E**XPENSIVE installations of automatic stops to bring trains to rest even though the engine men fail to note danger signals, are proof that railroad officials recognize that the mind of man may fail at a critical moment. Automatic stops for mine hoists were perfected years ago and the installation cost is quite small, yet many hoists, used as man elevators, are operating today without automatic stops of any kind.

For the most part these hoists are steam-operated, and the excuse for not adding the automatic protection is that the equipment is old and no doubt will be electrified some day. Continuing to operate these hoists without automatic stops is false economy. Accidents have demonstrated that the hoistman is liable not to bring the cage to a stop before hitting the bottom or may carry the men past the landing and into the dump.

There is always the further possibility of overrunning at the dump and breaking the cable. When stopping a hoist at the limit of travel not a second can be wasted. Distraction of the hoistman's attention for from one-half a second to a few seconds will prove disastrous.

The engineman of a limited train usually has many seconds to spare even when a red block notifies him that he must stop. Yet railroads are going to tremendous expense to equip tracks and engines with stops that work automatically and without dependence on that uncertain factor—human reliability. Comparatively speaking, every stop of a hoist carrying men is a critical stop, and no time can be wasted. Even the steam hoist can be fitted with an automatic stop for a nominal sum. No hoist, steam or electric, should be operated without this protective feature.





## Automatic Substation Obviates Attendance

Pumpman Starts Machinery from Push Button Underground — Full Automatic Protection Provided — Operates for Weeks With Only Periodic Inspections

By Frank H. Kneeland

Associate Editor, *Coal Age*  
New York, N. Y.

**T**HROUGHOUT the coal fields the automatic substation is growing daily more popular. Sometimes these installations are made underground and sometimes on the surface, but in any case the primary objects sought are the elimination of labor and the avoidance of the expense, delay and uncertainty incident to hand manipulation of the station equipment. A third object, of course, is complete avoidance of both mechanical and electrical injury to the machinery installed. Naturally some substations are more thoroughly protected in this respect than others.

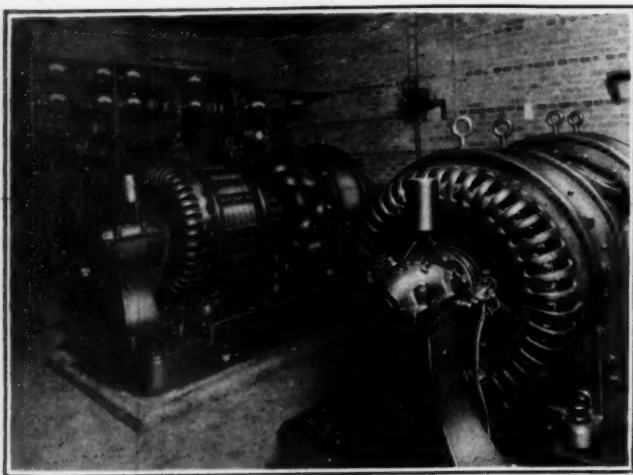
The Lumber Yard substation of the Kingston Coal Co., at Kingston, Pa., operated on central-station energy, is an excellent example of a station that is automatically controlled in practically every particular. In it are installed two synchronous motor-generator sets furnishing power to an underground pumproom. The two pumps there installed are driven by two 500-volt, 225-hp. direct-current motors. In case of emergency these machines can be cut in on direct-current

feeders coming to the substation from the company's own power house. All the direct-current equipment there installed is of 250-volt potential, but two generators in series will furnish the 500 volts required.

As may be seen in one of the accompanying illustrations the substation building is of substantial brick construction and provided with outdoor transformers. The power cable leading to the pump motors extends about 18 or 20 ft. from the switchboard within the substation to the mouth of a borehole that is 238 ft. deep, down which the cable passes. It is then led through a heading to the pumproom a horizontal distance of approximately 600 ft. This passage pitches somewhat so that the head on the pumps is 331 ft. and the total length of cable is about 918 ft.

By pushing a button located underground the pumpman can start the substation. Both motor-generator sets start on the same compensator and come up to speed in about 30 sec. Automatic controls are installed on the rheostats of both motors and generators; and automatic reclosing circuit breakers protect the line. The protective devices include the following: A phase-failure device, thermostats to protect the automatic starters, reverse-current relays, bearing thermostats and overload and no-voltage relays on the oil switch.

The headpiece shows the interior of the Lumber Yard substation of the Kingston Coal Co., Kingston, Pa., showing the switchboard with one of the two motor-generator sets in the foreground. Note the thermostat on the synchronous motor bearing to the left. These devices are so arranged and adjusted that should the bearing to which any one of them is attached heat, the plant will be shut down. It cannot be restarted after such a stoppage until the thermostat is reset by hand.



**General View of Substation Interior**

This shows the two synchronous motor-generator sets and the switchboard from which both incoming and outgoing current is controlled. All this control equipment is automatic in operation.

Another protective detail is the arrangement of the circuit breakers so that should a ground develop between the neutral and either side of the 500-volt system both breakers will trip out. This eliminates all danger on either side as both lines are thus killed.

Still another protective device is installed outside the building on the 13,000-volt power line near the transformers that supply current to the station at 2,300 volts. This is an automatic oil switch or circuit breaker that trips out if for any reason the station is overloaded.

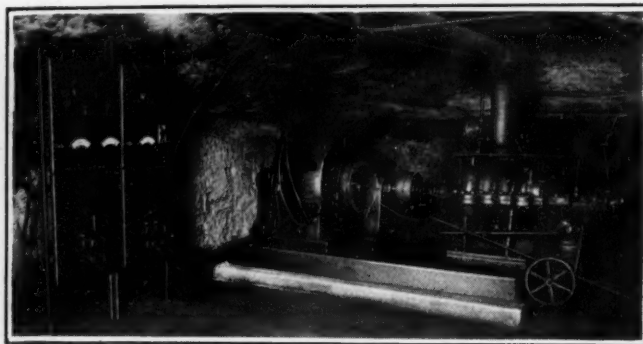
The substation building is fitted with a small exhaust fan. This is mounted in one of the windows and starts and stops with the other machinery. It thus effectively withdraws heated air from the building at all times when such air withdrawal is needed because of operation of the motor-generators.

Ordinarily this building is kept locked. The machinery it contains operates for weeks at a time with only periodic inspections. All the equipment employed is of standard design, and consequently the expense of installation was not excessive. Provision is made for practically any contingency that may arise. Thus any injury to the control wires will shut the plant down. Similarly the bearing thermostats will shut it down if any of the bearings should heat. The plant cannot be started



**Exterior of Station**

This substation is of neat and substantial construction, being built of steel, brick and stone. It is ventilated when in operation by a small fan the opening for which may be seen in the window in the end of the building to the right in the illustration. This fan is started and stopped with the rest of the substation machinery.



**Underground Pump Station**

From the switchboard shown the equipment on the surface is controlled. Pressing a button starts the substation machinery and as soon as the motor-generators have come up to speed the pumps may be put in operation. The substation may be shut down from the same point and in an exactly similar manner.

again until this difficulty has been corrected. Thus far—and this plant has now been running for several years—the operation of this substation has been satisfactory in every respect.

Making the power control itself as effectively as has been accomplished in this case has many advantages. Thus the expense of an attendant is obviated, the equipment is well protected from overload and abuse and this protection is ever present and reliable, always and eternally on the job. Furthermore mismanipulation of equipment is impossible as the automatic devices cannot be made to function in an improper sequence.

### **Respirators Shut Out Much Fine Dust But Do Not Wholly Clean Air**

A study of various types of respirators designed as safeguards against the presence of injurious dusts encountered in mining and many other industries has been conducted by the chemists of the Pittsburgh experiment station of the Bureau of Mines. Many industrial anti-dust respirators and many fabrics and filtering materials, including cheesecloth, canton flannel, bleached and unbleached muslin, filter paper and absorbent cotton, were tested.

The filtering efficiencies of the respirators were determined by passing air containing either tobacco smoke or suspended silica dust in minute particles through the respirator at varying rates. A small stream of the air that escaped from the respirator was viewed in a beam of light in a dark box. An equal stream of the unfiltered air was viewed alongside the first stream, and the unfiltered stream was diluted with measured portions of pure air until the two streams reflected light of equal intensity. In this way a measure of the filtering efficiency of the respirators was obtained.

The efficiencies of the industrial anti-dust respirators in restraining tobacco smoke were found to range from 5 to 33 per cent when the air was passed at a rate of 32 liters per minute. A gas-mask canister with two filters of absorbent cotton showed 63 per cent efficiency. A flat felt filter was most efficient, with 97 per cent.

The anti-dust respirators showed an efficiency against silica dust floated in air ranging from about 9 to 70 per cent. The silica particles were mostly one micron in diameter or four times the diameter of the tobacco-smoke particles. As the dusts most injurious to miners are about one micron in diameter, respirators, if worn, will exclude much dust, but not all.





## Phone-Dispatched Trips Speed Traffic; How Control Is Assured

Wiring Should Be Buried Near Entry Rib and Each Section of Mine Have Separate Line—In Gaseous Mines Would Replace Telephone by Motor Boss

By J. B. Hicks

Electrical Engineer, Consolidation Coal Co.,  
Fairmont, W. Va.

**B**Y PUTTING the movement of trips in the mines in control of a dispatcher the efficiency of the hauling system is greatly increased. What system should be used is dependent on the kind of mine. The plan adopted is obviously different for a non-gaseous, or open-light, mine from what it would be with a gaseous, or closed-light mine, because in the first the telephone can be used. The telephone furnishes the most efficient means of dispatching, and its use in non gaseous, or open-light, mines is to be recommended.

For such a method of regulating haulage a dispatching office is located near the shaft bottom or tippie. In this office is a switchboard with a sufficient number of lines to take care of all side tracks in the mine. Independent lines are run from the switchboard to the telephone at each of the side tracks, the purpose being to eliminate the possibility of any misunderstanding of orders. Any communication from one section of the mine to the other passes through the main switchboard in the dispatcher's office.

The lines from the dispatcher's office to the different sections of the mine should be laid in lead-sheathed and armored cable of a sufficient number of pairs to take care of the mine requirements. These cables may be suspended from the rib or roof by any

good mechanical method. It is, however, best to bury the cables in the bottom, concrete them in, or pull them through tile ducts. In laying the cable, hand holes must be provided near the rib at the different face and butt entries for tapping off the several telephone lines.

I have insulated a cable of this kind by laying it in a small rectangular wooden trough, pouring hot asphalt over the cable until the trough is full, and then nailing on a cover. This prevented the lead from being eaten away by electrolysis and also gave good mechanical protection.

As stated before, the cables or wires may be suspended from the rib or roof, but they are not so well protected from falls as they are when buried or concreted in the bottom. If the floor of the mine is inclined to heave, the cable should be placed near the entry rib as the bottom heaves less at this point. In consequence the cable is protected against disturbance. At each

telephone station a hole should be cut in the rib for use as a booth. A door placed on this booth would enable anyone who was using the telephone to talk without disturbance while trips were passing. A spring, attached to this door, could be arranged to hold it open whenever the telephone was not being used. Thus anyone near at hand could hear the bell and answer calls. The dis-

**R**ELIABLE TELEPHONY is needed if dispatching is to be a success. In order to prevent misunderstanding each section has its own line leading into the dispatcher's office. Mr. Hicks favors placing the wires in a lead-sheathed and armored cable carried in ducts underground or laid in a bed of concrete or asphalt. To avoid mistakes and delays in transmitting messages, booths should be provided with doors to exclude the noise of trips.

Article entitled "Dispatching for Long Haulage" delivered at the Annual Convention of Practical Coal-Operating Officials, held by the American Mining Congress, at Cincinnati, Ohio.

patcher must have absolute control of the movements of all locomotives. This provision, however, will not in any way relieve the mine foreman of the responsibility of assigning equipment to the sections to which it is best adapted. All orders governing assignment and transfer of equipment to and from sections are issued to the motormen only through the dispatcher who gives them right of way to their destination.

The dispatcher being thus put in control can direct the movement of all the locomotives to the best advantage. In order to do this, he has a sheet before him giving the number of all locomotives, the check numbers of the motormen and brakemen and a record of the sections in which they are working. This sheet gives him the time required for the locomotive to make round trips, the number of men at work in each section and the number of empties required to take care of all the loaders.

At the beginning of the shift, each motorman on the gathering locomotives calls the dispatcher, giving the latter his locomotive number, his check number and that of his brakeman, and then proceeds to his side track as ordered. When a motorman reaches his side track, he calls the dispatcher and reports to him the number of empties he finds there; after placing the first trip of empties the motorman returns to the side track, calls the dispatcher giving him the number of loaders in the section and number of loads which he has placed on the side track.

On each trip, the motorman on the gathering locomotive on arriving at the side track gives the number of loaders in the section and reports loads and empties on the side track. He also reports any delays waiting for empties, loads or wrecks. Loaders leaving the section before cleaning up their working places are reported to the dispatcher.

This enables the latter to send the correct number of empties to the different side tracks, thereby making it possible to distribute the empties to the best advantage. At the end of the shift, the motormen on the gathering locomotives call the dispatcher from their side tracks and report loads and empties at that point and receive orders to go to the motor barn.

After the locomotive is in its stall, the motorman calls the dispatcher and reports the locomotive number, his check number and that of his brakeman. This gives an accurate check on the daily performance of the locomotive and the time worked by each man.

As a rule, the gathering locomotives are started to their sections before the main-line locomotives, as has already been described. As soon as the former have

started away the motormen on the main-line locomotives, each in turn, then call the dispatcher giving their locomotive numbers, their check number and those of their brakemen. The dispatcher instructs each motorman as to the number of empties he shall take, the side tracks at which they are to be placed and where to get his trip of loads. As soon as he has coupled his locomotive to the loads, the motorman calls in for orders to come to the shaft bottom or tipple.

When the loads are set off, the motorman reports to the dispatcher the number of loads hauled and the reasons for any delays. He then receives orders governing his movement and instructions as to the number of empties to be delivered to the side tracks. This operation is followed throughout the shift until the motorman is ordered to the locomotive barn. After his locomotive has been placed in its stall, the motorman calls in, giving the locomotive number and his check number and that of the brakeman.

When the number of locomotives coming to the shaft bottom or tipple is so great that delays are encountered in waiting for locomotives to clear, a system of intermediate haulage becomes necessary. This intermediate haulage is dispatched in the same way as the main-line haulage.

When it becomes necessary to have a number of main-line locomotives traveling over single track, an automatic block-signal system should be installed to guard against rear-end collisions. When no block-signal system is in effect it is necessary for safety to use a rear brakeman to flag against other locomotives should the trip be wrecked or delayed.

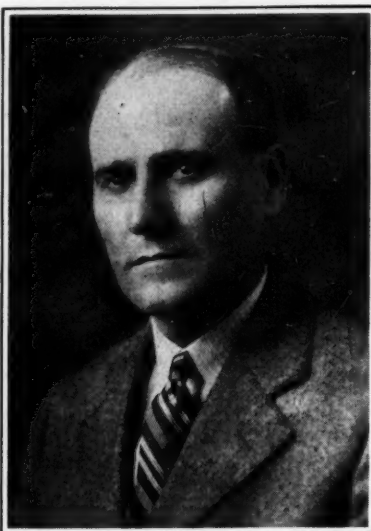
At the end of the shift, the dispatcher totals his record sheet, which gives a complete summary

of loads and empties handled, the delays, the sections in which they occurred and the cause of the delays. A summary of this sheet is given to the mine foreman enabling him to analyze the haulage record of the shift for the purpose of removing the cause of delay.

By placing the haulage in charge of a dispatcher, the mine foreman is relieved of much detail. He can use the telephone to keep in close touch with all operations of the mine and at the same time can personally supervise the work in different sections.

This system of dispatching in non-gaseous, or open-light, mines, insures the most efficient use of all locomotives and mine cars, reduces delays to a minimum, and enables the mine foreman to use his time to better advantage.

In dispatching long-distance haulage in gaseous, or



J. B. Hicks

For twenty years Mr. Hicks has been obtaining the experience that enabled him to devise the dispatching system described in this article. He completed his education in 1906. During that and the following year, he was employed by the Knoxville Street Railway & Light Co., in rebuilding its power plant and car barns as well as in overhauling its traction system. During 1908 he installed a power plant for the mines at Windrock, Tenn.

In 1908 and 1909 he was employed as service engineer by the Goodman Manufacturing Co., in installing generators and similar equipment at various plants and mines, leaving this firm to take a position as electrical engineer with the Interstate Coal Co. From 1910 to 1913 he installed central plants for the Asher Coal Mining Co., and from 1913 to 1916 he held a somewhat similar position with the Black Mountain Coal Corporation. From 1916 to the present time he has been with the Consolidation Coal Co. During the course of his professional experience he has developed or had a part in the development of several pieces of electrical mine equipment. Among these are a combination locomotive, a storage-battery locomotive and a combination permissible storage-battery equipment for cutting and hauling coal.



closed-light, mines, the problem is entirely different, because the most efficient dispatching method, that of using the telephone, cannot be used with safety, as no telephones are being manufactured which bear the U. S. Bureau of Mines approval for use in gaseous or closed-light mines.

In such mines the Consolidation Coal Co. uses a motor boss instead of a dispatcher. He has full charge of all haulage and must keep all locomotives working to the best advantage and see that mine cars are distributed properly. The motor boss keeps in touch with the gathering locomotives through the motormen on the main-line locomotives, but he visits each section as often as possible during the shift. He relieves the mine foreman of the detail of handling the locomotives and trips, but does not in any way relieve him of the responsibility of assigning the equipment to the sections to which it is best adapted. The gathering locomotives are first sent to their sections by the motor boss who gives each motorman a daily report card on which he records the time of leaving and returning to the motor barn, the loads pulled, the empties handled, the number of loaders, the places from which loads are taken, the places cleaned up, the places partly loaded out and the delays waiting for loads, empties or wrecks. At the end of the shift the motorman and brakeman record the time, put their check numbers on this card, sign it and turn it in to the motor boss.

From these cards the motor boss gets the time worked by each motorman and brakeman, a complete record of the haulage for the shift and the causes of any delays, which he summarizes and reports to the foreman.

At each side track in the gathering-locomotive sections is placed a small blackboard with spaces showing the headings and recording thereunder the cuts, part cuts, clean-ups, loads, empties, number of loaders and locomotive number. These are filled in by the motorman after each trip. By looking at this board, the motor boss or the other foreman can tell how the turn is running in the section.

All motormen on gathering locomotives are instructed and warned that from the beginning to the end of the shift, main-line locomotives have absolute right of way and are not on the lookout for gathering locomotives.

Should it become necessary at any time during the shift for any of the gathering locomotives to go to the motor barn or to transfer to another section, they can follow the main-line locomotive out. If they miss connections with the main line locomotive they are permitted to flag in by sending a brakeman ahead to protect against collision. Any transfer of gathering locomotives must be accomplished with a minimum delay to main-line locomotives.

At the end of the shift the gathering locomotives can safely return to the motor barn as the right of way for the main-line locomotives has expired.

After the gathering locomotive is placed in its stall in the motor barn, the motorman fills out his card, turns it in to the motor boss, and his shift is completed.

**I**F THE DISPATCHING is to be well-performed the dispatcher must have full control. The foreman may locate the equipment according to his best judgment and the electrical engineer or superintendent may set the number of loads a locomotive shall haul, but no one should interfere with the dispatcher in the detail of the performance of his duties, for dispatching thrives with unity and fails with meddling in control. One of its principal virtues is that it relieves the mine foreman for his other duties.

At the beginning of the shift and after the gathering locomotives are sent out, the motor boss gives each motorman on the main-line locomotives a card to fill out during the shift. This card shows the number of sections served, the empties and loads per trip, the number of trips and the delays waiting for loads, empties or wrecks. The motor boss then sends the main-line locomotives to their sections with instructions specifying where they shall leave the empties and from which side track loads are to be picked up.

The loads are brought in to the shaft bottom or tippie, set off, and the locomotive run light to the empty track. A blackboard is located near the empty track with spaces showing number of sections served, loads, empties, the number of the locomotives and time of arrival and departure of same. These are filled in after each trip by the motorman so that the motor

boss and foreman can tell how the different sections are being served, can check the production of these sections and ascertain the location of the locomotives. This method is followed throughout the shift.

At the end of the shift the motormen on the main-line locomotives place their locomotives in the stalls of the motor barn, total and sign their cards and turn them in to the motor boss. The motor boss summarizes these cards in his report to the mine foreman.

#### FLAGS MAIN-LINE LOCOMOTIVE

If a main-line locomotive should have to leave the motor barn immediately after the end of the shift a brakeman must be sent ahead to flag it, as is required of a gathering locomotive running on the main-line track during the shift.

To prevent any motorman on a locomotive from turning in a false report of time required to make a trip, a time study must be made of each section and the motor boss furnished with a record of the time required for any trip.

When the number of locomotives delivering trips to the shaft bottom or tippie becomes so great that delays are encountered in waiting for locomotives to clear, it is necessary to install an intermediate haulage system between gathering locomotive and main-line locomotive side tracks. This intermediate haulage system is handled like that of the gathering locomotives.

At important junction points it is necessary to station a flagman to align switches and give the locomotives the right of way in and out of sections.

It is obvious that trips can be dispatched more efficiently by telephone than by a motor boss. This condition can only be remedied by the development of a telephone which will merit the approval of the U. S. Bureau of Mines.

Many shales, mill tailings, adobes and clays, when tested by the U. S. Bureau of Mines, have been found to contain over 25 per cent of free silica and hence are considered unsuited for rock-dusting purposes as a safety measure in coal mines.

## Coal Men You Should Know

### Walter Barnum

By Sydney A. Hale

**T**EN YEARS AGO Walter Barnum began his official connection with the coal industry under the handicap of starting at the top. Mr. Barnum, however, is not one of those who are satisfied to have "greatness thrust upon them." In the years following his election as treasurer of the Pacific Coast Co. in the fall of 1916, he acquired a grasp upon the broad fundamentals of the business and upon management details which made his title to leadership secure. His recent elevation to the presidency of the National Coal Association, therefore, was no accident of organization politics, but a recognition of fitness for larger duties.

Some credit for his success must be given to heredity. His father, William Milo Barnum, now chairman of the Pacific Coast Co., has made his mark in law, banking and commerce. It was, of course, the elder Mr. Barnum's long association with the Pacific Coast mining and allied enterprises that led to his son's entrance into the coal industry. But that step was not taken until after the younger Barnum, who was graduated from Yale College in 1910, had learned the rough-and-tumble fight of business as a roustabout in the Mid-Continent oil fields and in gravel plant operation, real estate, dredging and contracting in his native city of New York.

Always keenly interested in organization work, it was only natural that Walter Barnum should be with the pioneers who launched the National Coal Association in 1917. Two years later he succeeded D. C. Botting as Washington director on the board and has been re-elected term after term ever since. When post-armistice conditions made membership in the association less attractive to some of the hard-pressed coal operators, Mr. Barnum was called up to take an active part in the campaign to maintain the membership. Later he was made a vice-president and also assumed leadership in research work.

Mr. Barnum's varied background has given him a broader view of the bituminous industry than many who have fought their way to the top from the lower ranks. With some of the latter, perhaps, the bitterness of the struggle has clouded their vision of the future. Not so with Mr. Barnum. He is intensely proud of the past

achievements of the industry, but equally alive to the possibilities of future development. He recognizes both the opportunities and the obligations of the industry. His convictions are firm, but not dogmatic. Wasting no time in the pursuit of panaceas, he is, nevertheless, eager to extract the workable good out of every suggestion for betterment which may be advanced.

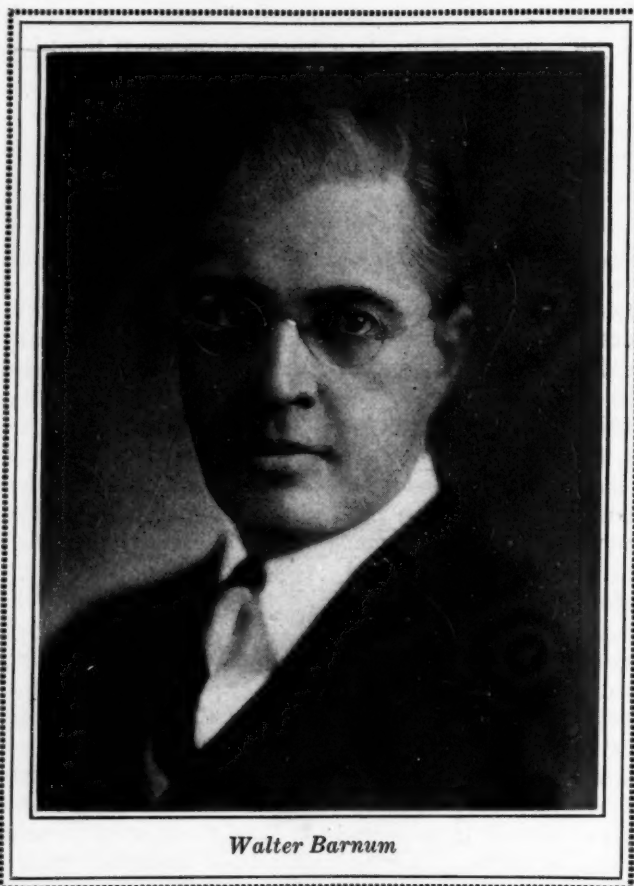
The new president of the National Coal Association discusses his own career and the part he has played in strengthening the bituminous organization during its years of travail reluctantly. When conversation turns to what the association can accomplish in the further improvement of the industry, however, Mr. Barnum's interest is at white-heat. Belief in the benefits of organized effort is no pose.

"If you tell me what you know and I tell you what I know, we have doubled our store of knowledge," is his creed. "Progress and civilization are built upon the interchange of knowledge and the close association of individuals. If the National Coal Association did nothing else, the opportunities it affords for closer contact between individual operators and the growth of mutual confidence would

justify its existence and whole-hearted support.

"But it offers much more than these necessary intangibles. As a link between the various government agencies and the individual operators scattered from coast to coast it is an agency of effective convenience which renders necessary service to its members at a cost far less than would be possible were the members to undertake the same service individually and independently. As a channel for the interchange of trade information between its members, it provides the means for the development of sound trade practices.

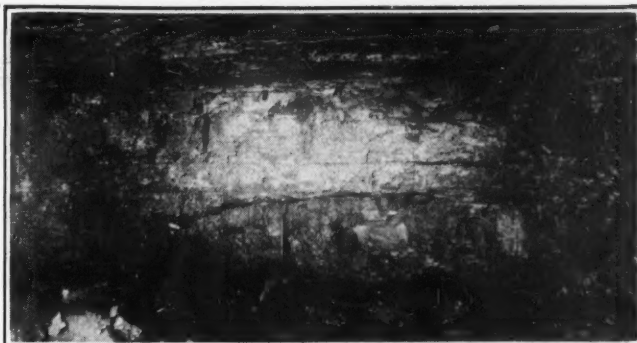
"The only limit upon its opportunities is the limit imposed by the extent of its membership and its financial resources. Every substantial addition in membership means that the association will be able to further expand the service it is rendering all its members. Its policies are big enough and broad enough to merit the support of every worth-while operator. This is the day of organization and the measure of the future prosperity and stability of the bituminous coal industry depends upon organization."



Walter Barnum



## How to Shoot Coal for Machine Loading Without Making Too Much Slack



**Increasing Quantity of Permissible Often Merely Shatters Coal Without Widening Breakage Area—More Holes With Same Weight of Explosive Give Better Results but Must Be Properly Placed**

**By B. L. Lubelsky**

Explosives Engineer, Pittsburgh Coal Co.

**W**ITH mechanical loading, blasting problems take on a new aspect, for the coal must be blasted so as to leave it in such condition that it can be loaded without the use of hand picks. The coal in the Pittsburgh bed, in particular, is disposed to break away from the top and from the sides, settling down in an unbroken mass that can be loaded only after the powder cracks have been opened up with a pick.

The hand loader meets that difficulty by shooting a tight shot in the side of the place, opening this up with his pick, loading the coal that the shot has loosened, and then firing a butt shot that projects the coal into the open space left by the removal of the coal which the tight shot has loosened. The coal thus dislodged is free below, in front and at the side, consequently the shot is able to do effective work. The coal rolls free, being broken into pieces that are readily loaded.

With machine loading the whole face is shot at one time and must be so fractured as to be available for loading without any hand picking. This has introduced difficulties not experienced with hand loading. Moreover, the operator who now pays company men to drill and shoot the coal desires, naturally, to know that the work, for which he pays directly and with powder which he himself purchases, is done in the best and most economical manner. For this reason he is endeavoring to ascertain the best method of bringing down the coal at the lowest possible cost.

What is that cost? At the average operation in the Pittsburgh bed at least two men will be needed to

drill and shoot the holes for two machines capable of loading approximately 175 tons each, or 350 tons per day. This estimate is based on five holes per working face and eleven places per day or about fifty-five holes drilled, tamped and shot per shift. At the high wage scale the cost per day would be \$15, or 4.3c. per ton.

In addition to this drilling and shooting cost is the cost of the explosive used. About 1 lb. of explosive and two electric blasting caps will be used for each 10 tons of coal mined, or roughly 3c. per ton of coal, making the entire cost for drilling and shooting, including the cost of explosive, 7.3c. per ton.

That cost, of course, will vary with the physical character of the coal, the width of the working place and the thickness of the coal as well as with the preparation of the face for the explosive. Where the face is center-sheared, the tonnage per pound of explosive will be materially increased. In one Illinois mine, where two shears are made in each face, 15 tons of coal per pound of explosive are being obtained as against only 5 tons where the coal is sheared only in the center.

In shooting for mechanical loading, the efficiency of the operation of the machine is the important factor, the production of lump coal being a secondary consideration. When the shots are placed and charged for hand loading, the important consideration is the percentage of slack. On the other hand, a cut for machine loading must be so broken that the machine has some loose coal on which to start operations. The coal must also be cut so free from the ribs and top and the lines of breakage must be so generally distributed that the coal will not be set down in a solid block across the width of the room.



**B. L. Lubelsky**

Mr. Lubelsky is one of a new class of engineers who make explosives a study. The Pittsburgh Coal Co. is making a careful study of methods of blasting with a view to mechanical loading and called on Mr. Lubelsky to take charge of the working having in view his unusual experience in that work. In 1922-23 he performed general underground work at the mines of the Raleigh Wyoming Coal Co., Edwight, W. Va., and at those of the Cabin Creek Consolidated Coal Co., Kayford, W. Va., while studying at the University of Illinois. In 1924 he received the degree of bachelor of science from that institution and was made a research fellow at Carnegie Institute of Technology and in co-operation with the Bureau of Mines and operators of Pennsylvania, he became joint junior author of Bulletin 19 "Factors Affecting Lump Coal Production." In 1925 and 1926 he was explosives engineer for the Washington Gas Coal Co., the Chartiers Southern Coal Co., and the McKeesport Coal & Coke Co. engaged in installing proper methods of shooting coal to obtain high percentages of lump.

Article entitled "Blasting for Mechanical Loading," read before the "Cutting and Blasting Session" of the Cincinnati convention of coal operating officials held by the American Mining Congress.

The illustration serving as headpiece shows the coal in a section of the Pittsburgh bed after a typical tight shot. Three cartridges of permissible were used. The normal zone of breakage also is seen.



Fig. 1—After Firing Second or Butt Shot

This shot was charged with two cartridges. A cut like this could not be loaded efficiently by machine, for the coal is too solid from top to bottom and across the room.

Improper blasting causes delays in loading, and thus the indirect cost of improper blasting may be greater than the actual cost. It has generally been agreed by men investigating the subject that success in mechanical loading depends largely on the proper preparation of the coal for that operation, so that the machines, which operate irregularly at best, can perform their work at greatest efficiency all the time cars are in place for loading.

Time studies of loading-machine operation conducted and compiled by Messrs. Gray and Clark, of the Pittsburgh Coal Co., have shown that in the cycle of operations incidental to loading coal mechanically, cars are in position for loading coal only about 60 per cent of the time during a full working shift. Thus, out of 480 minutes the machine can devote at best 300 minutes to the actual loading of coal. In order to obtain a high degree of efficiency during that 60 per cent of the working shift, the machine should operate without the further disadvantage of having to wait while coal which is improperly shot is made ready for loading.

Consequently to a large extent a previous knowledge of the shooting characteristics of the coal with a view to mechanical loading is desirable before purchasing a machine as the type of machine used may be influenced by the way in which the coal reacts to shooting. The coal in certain seams like the Pittsburgh bed has a tendency when it is shot down to drop in an almost solid block, and a machine to be successful must not only be able to load out coal that is shot down or loose but must have enough digging power to load out the bottom coal which though more or less fractured by the shot settles down almost as if unbroken. Other beds of coal are of such a friable nature that shooting will roll almost the entire cut into the room and allow of ready loading without the need for digging power.

As in shooting for hand loading, the coal must be carefully undercut, the ribs must be cut as straight as is practicable with the type of undercutter being used and also the cuts must be made directly on the face in those beds of coal having a pronounced cleat. Too often one side of the room is advanced from 1 to 2 ft. ahead of the other side, making the line of breakage at an angle to the cleat.

Bugdust must be scraped out from under the cut, if the best results are to be attained. A normal kerf of 6 in. is none too large a margin of expansion for the breakage of the coal, and an inch or two of bugdust at the back of the undercut materially decreases

the efficiency of the latter. The boreholes should not be drilled before cutting, for when this is done the holes may be made shorter or longer than the cut or may be placed too close to the rib. If it is necessary for the best cycle of operations, the holes should be measured before shooting and if not correct should be changed to conform to the regularly established system. These are considerations that are common to blasting the face whether for machine or hand loading.

The most important of the problems that arise out of the introduction of machine loading is the actual distribution of the explosive over the cut of coal in order to have the coal shot with a minimum of overhang on the ribs or face and without having the coal drop down in a solid block that cannot be readily attacked by the machine. In the final analysis this brings up the questions: How many holes are needed; where shall they be placed and how much explosive shall be allotted to each hole?

In changing from hand to mechanical loading the tendency has naturally been to adhere as closely as possible to blasting methods that have been long practiced. If the regular charges did not bring down the coal for easy machine loading, the general belief has been that the use of more explosive would be the cure. As a result the coal has been overshot.

Unfortunately, overshooting the coal merely produces an excessive quantity of slack without accomplishing what is desired, which is to prepare the coal for easy loading. A shot has usually a normal zone of breakage determined by the texture of the coal and increasing the charge will not change this but merely open up the breakage lines to a greater extent than with a normal shot. As an example of this see the illustration in the headpiece which shows the normal breakage of a tight shot in a mine working the Pittsburgh bed.



Fig. 2—Tight Shot Under Same Conditions as That Shown in the Headpiece of This Article

This shot has been overcharged with four cartridges instead of three, which is the normal charge. It thus shows the effect of overshooting. As a result of the increased charge, only a few more breaks were made in the body of the coal than are obtained when a normal charge is used. Note how the coal is shattered around the drillhole.

A hole properly placed requires a certain charge of explosive to break the coal within the normal range of that hole. Any additional explosive causes excessive breakage without increasing the ease of mining. If a normal charge in each hole does not succeed in bringing down the entire cut, the cure will be found in varying the number and placement of the drillholes.

Less explosive in each hole and more holes will eliminate overhang and prevent the coal being set down by the blast in a solid block. Of course, this change in



method will increase drilling costs, but the expense of drilling an additional hole is slight in comparison with the advantage to be gained from greater loading efficiency and a larger production of lump.

In the Pittsburgh bed it has been almost the general practice to shoot two holes for every cut of coal. The tight shot is fired first, and then the miner shears through to the back of the cut. All the coal thus loosened is loaded in the cars before the second shot is fired. This shot, known as the "butt shot," is thus open-ended. It gives the greater blasting efficiency and the better grade of coal.

The illustration in the headpiece shows the results generally obtained at one mine with a tight shot using three cartridges of a permissible explosive. The coal is well cut from the back, ribs and top but has been set down in almost a solid block. The miner will have to use many blows with his pick, cutting in along the powder cracks before the block will be loosened. From end to end of the face the pick will have to be used constantly to dislodge the coal and break through the bands.

This tight shooting has been found to give the larger percentage of lump coal, despite the fact that the miner

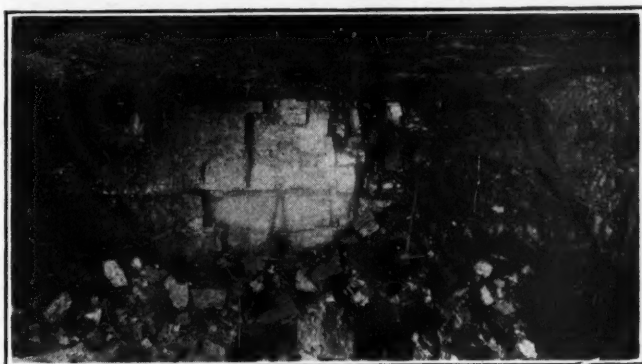


Fig. 3—After Firing the Second Shot in the Coal Face Shown in Fig. 2

Here three cartridges have been used instead of two, so that this shot also is overcharged. The entire shot was fired with seven cartridges, four in the tight shot and two in the butt shot. The result compares unfavorably with that shown in Fig. 1.

is constantly required to use his pick in loading out a shot of this kind. The statement that with pick work more slack is made is not applicable to a shot of this type, because the coal is loosened by the pick along the rib which has already been powder-cracked. The miner is not driving his pick against solid coal.

In shooting this same cut of coal for mechanical loading it is considered impractical to shoot only one part of the face at a time. Consequently, should the same system of shooting be used, the two holes would be fired together. Fig. 1 shows the result when a typical cut of coal in the high coal of the Pittsburgh bed is shot with the same average charge as in the cases illustrated before, namely three sticks in the tight shot and two in the butt shot.

Although the coal could be dislodged quite easily by the use of a pick and would be if the coal were to be loaded by hand, a machine attempting to load such a cut would find the coal almost as difficult to dislodge as if it were still a solid block. The coal would have dropped in a single piece from a natural bedding plane located about 12 in. below the drawslate, and the machine would have no opportunity to loosen it.



Fig. 4—Coal Being Properly Prepared for Mechanical Loading; This Shows the First Shot

Two bottom shots are drilled between the bands 6 ft. from the ribs and 3 ft. deep. One half cartridge is used in each hole. The purpose of these shallow, tight shots is to break the bands and loosen the bottom coal so that the machine can gain an entrance.

In Figs. 2 and 3 can be seen the effect of overcharging the drill holes. In Fig. 5 the tight shot was fired with four cartridges instead of three as is the more usual practice. All other conditions were practically identical. The zone of breakage was practically the same as in the previous shot, the only noticeable difference being that a large hole was blown at the top of the coal. An excessive quantity of fine coal, caused by overcharging, can be seen around the drillhole.

The butt shot in this cut also was overcharged, being loaded with three instead of two cartridges. Comparing this cut as shown in Fig. 3 with that of the previous cut in Fig. 1 it is quite evident that shooting with more than the normal quantity of explosive in the same number of drillholes does not break the coal sufficiently to make loading easier.

#### MACHINE-LOADING CUT SHOT DIFFERENTLY

These illustrations show quite clearly that the type of shot that can be loaded out by the miner with comparative ease is entirely unsuited to mechanical loading and that some other system of drilling must be devised. In this instance, several points should be borne in mind. The coal in the Pittsburgh seam is fairly uniform in texture from top to bottom. The face and butt both fracture along definite planes. The coal tends to drop from a parting near the top of the coal and to shear well from the rib and face. The greatest difficulty is found with the bands which must be broken for efficient

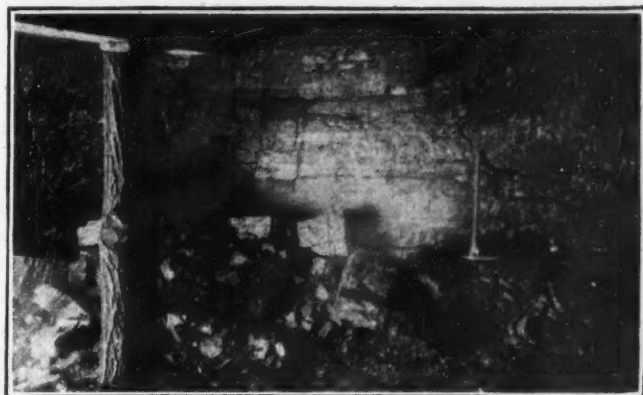


Fig. 5—Second Shot Made in the Center

This is a relatively heavy shot made with 2½ cartridges. Its purpose is to separate the coal at the center from that at the ribs so that the coal will not fall in a solid block across the room.

loading and in the tendency of the coal to fall in a solid block across the entire face.

To meet these difficulties the seven cartridges needed should be divided among five holes. Two bottom or snubbing holes are placed to break the band. These loosen the bottom coal so that the machine can dig into and load it easily, thus releasing the top coal and allowing it to roll forward if properly broken. The break shot should be fired in the center rather than on the rib to prevent the entire cut settling down across the full width of the room. The two corner shots are intended to fracture the coal at the ribs.

In a test cut, after the last shot had been fired, approximately 14 tons were ready to be loaded before any standing coal was reached, and as this loose material was loaded out this latter coal gradually rolled out, so that no coal was left standing in the place. Fig. 4 shows the line of breakage caused by the bottom shots.

Fig. 5 shows the result of the center shot. This broke the coal so effectually that a machine could dig its way through to the back, if necessary. Fig. 6 shows the result of the first butt shot. The coal sheared well along the rib and was brought free from the top. Fig. 7 shows the last shot which caused the front of the coal to roll forward.

The advantage of drilling the extra holes while using the same quantity of explosive is clearly shown by the illustrations. However, although this placement of drill holes will meet the demands in certain sections it is not to be recommended for all conditions. In some areas of the same coal bed where top coal is left in place for roof protection, another top hole must be added to assure a clean break along the top. In other areas and in other beds, an additional hole may be needed to break the bottom coal sufficiently to allow the machine to



Fig. 6—First Rib Shot Fired with 1½ Cartridges

The third step is the bringing down of the face, which has been weakened by the center shot. This breaks the coal from the rib.

enter. But at all times, where additional breakage is required, it should be obtained by a charge in an extra hole placed in that part of the coal bed remaining unbroken rather than by an attempt to obtain the same end by overshooting the regular hole.

A consideration of the comparative production of lump coal with hand and mechanical loading requires a knowledge of the methods adopted with the former system. Wherever the practice has been to shoot the entire cut of coal at one time, the introduction of extra holes can hardly be expected to increase the percentage of slack, provided the drilling and shooting of the

coal is given proper supervision. Each added hole, however, introduces the possibility of misplacement and overcharging, and this fact must not be overlooked.

In mines following the practice, previously described as customary in the Pittsburgh district, of shooting the "tight shot" and shearing to the back before firing the "butt shot," the percentage of lump-coal production is such as cannot be equalled by coal prepared for mechanical loading. In research work conducted in co-operation with the Carnegie Institute of Technology, the Bureau of Mines and the operators of Pennsylvania, a

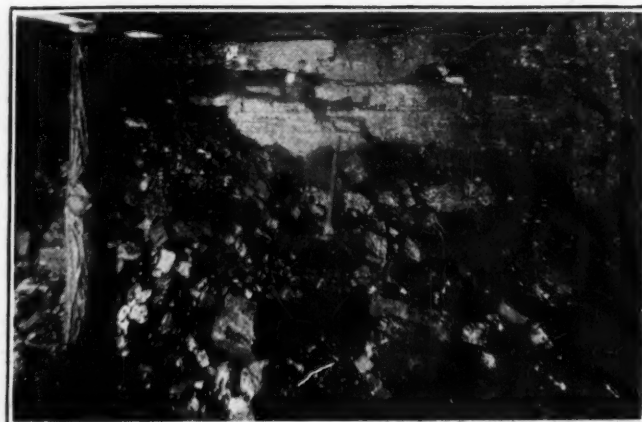


Fig. 7—Second Rib Shot Fired with 1½ Cartridges

As a result of loading six and a half cartridges into the four drill-holes and firing these in the manner indicated, about 14 tons of coal were brought down so that the machine could start loading. The remainder of the coal rolled forward as rapidly as the loose coal was removed.

series of tests was made at Banning No. 2 mine of the Pittsburgh Coal Co. Incidental to the tests the lump-coal percentages were determined separately for tight and butt shots. Though these tests covered a wide range of factors influencing the production of lump coal, the relation between the fine coal obtained from tight and butt shots was fairly uniform throughout the entire investigation.

An analysis of these results, published as Bulletin 19 of the Carnegie Institute of Technology, aids in proving the advantage of shots in coal with a loose end as a means of obtaining a maximum percentage of lump. For the entire year's run the large coal produced from tight shots averaged 5.2 per cent less than was produced from butt shots. The percentage varied from 2.2 per cent in some tests to 10.4 per cent in others, and the greatest difference was found in those tests giving the best general results.

The reason for this is self-evident. The tight shot has no room for expansion except toward the kerf of the undercut which is insufficient for expansion without crushing. The butt shot has an additional open end and can expand without decrepitation. An overcharge of explosive in an open-ended shot does not increase the slack percentage to the same extent as in the tight shot, for there is room for expansion without undue breakage except around the drill hole.

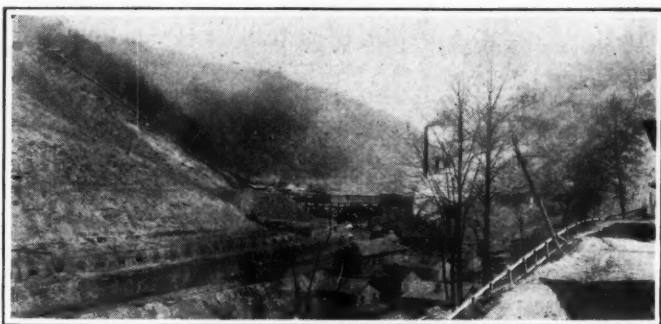
With these figures as a basis it is natural to suppose that by shooting the entire cut of coal at one time the slack percentage will increase from 3 to 5 per cent over what has been previously obtained in the mine. With the differential in selling price of lump and slack coal, the production of additional slack causes such a reduction in the average selling price that it cannot be neglected.



## Safety Not Neglected in Mines Of Big Sandy Valley

**B**ECAUSE little has appeared in the technical press concerning safety work in the Big Sandy River district of eastern Kentucky, it should not be inferred that no consistent effort is being made to reduce the number of mine accidents occurring there. A trip to the headwaters of Marrowbone Creek in Pike County will afford abundant evidence that safety practices are being carefully inculcated.

In this locality the Edgewater Coal Co. operates two mines at the head of the creek, and several others near by. One man devotes his entire time to the promotion of safety. His activities include personal inspections of machinery, working conditions, productive places and the like, personal contact with the miners, the posting of safety bulletins, erection of cautionary signs at

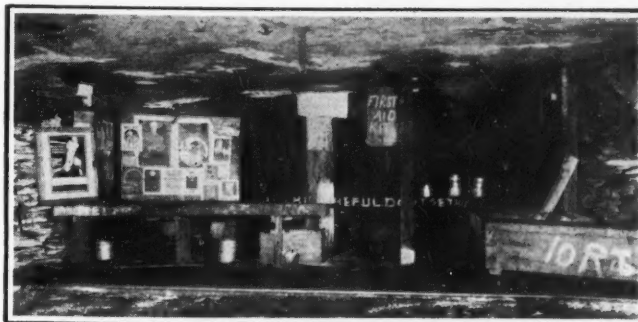


Looking up Valley at Coaldale Tippie

This operation of the Edgewater Coal Co. lies on the left fork of Marrowbone Creek about a mile from Hellier, Ky. Two openings on each side of the valley, in two separate beds, are served by this structure. Coal from the mine at the upper left is delivered to the tippie through a 36-in. pipe chute. Power is generated in a hand-fired direct-current plant.

danger points and the safe installation of new equipment.

Inside the mines much worth-while effort has been made. Electric lights have been placed at 60- to 100-ft. intervals on the main haulways. Refuge holes have



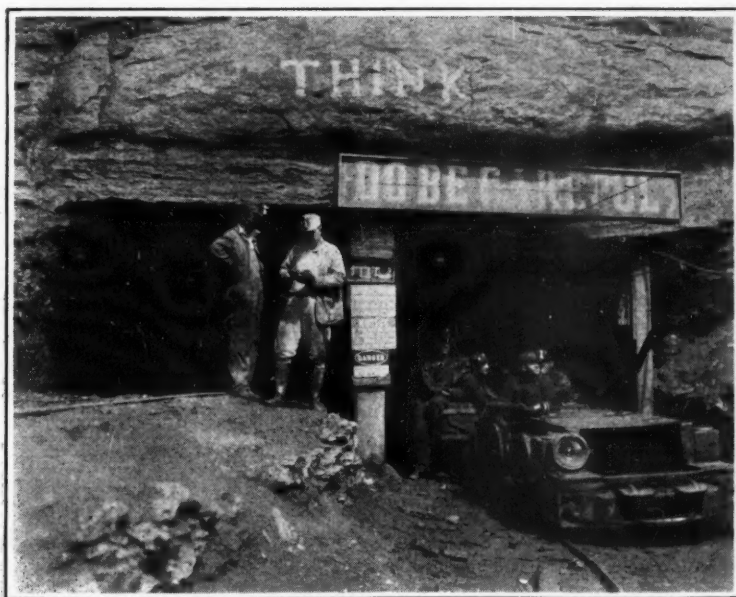
Bulletin Board at First-Aid Station

This station is on the Tenth Right in No. 3 mine at the Coaldale operation. Behind the rest bench is a bulletin board with current safety posters. At the extreme right is a wooden box supported on glass insulator feet which safeguard from stray currents the explosives intended for that section of the mine. First-aid material is placed in a boldly marked box.

been dug in the rib and the lights so arranged that one is in front of each. First-aid stations have been established near the workings and improved facilities provided for handling explosives. Some of these include insulated drawbars on cars carrying powder and wooden storage boxes mounted on glass insulators, a box of this kind being provided for each section of the mine. A container of this type may be seen at the extreme right in an accompanying illustration of one of the first-aid stations. As shown by the markings on this box, it supplies powder to the Tenth Right section only.

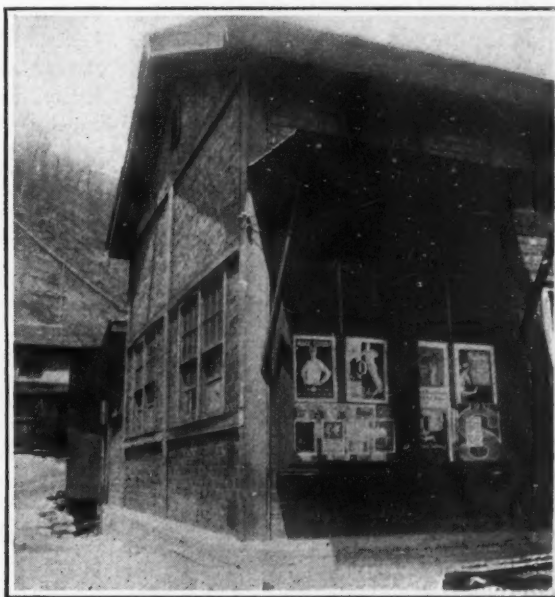
In prominent locations at each mine, substantial bulletin boards have been erected on which safety posters are prominently displayed. Interest in these boards is aroused by attractive bulletins which are changed from time to time so that there usually is something new to greet the eye.

At the safety meetings held in the evenings the proceedings of a "kangaroo" court afford much amusement. Violators of safety regulations are here tried by their fellows and a small fine imposed upon those found guilty of transgressing safety rules. Collection of such fines is handled on the payroll, and the money goes into a fund for the purchase of refreshments or to be used otherwise as may be desired.



Portal of No. 3 Mine at Coaldale

At appropriate points outside and inside of the mines are placed gentle reminders such as the "Think" and "Do Be Careful" signs shown in this photograph. On the upper track with notebook in hand is E. C. Miller, safety inspector of the company.

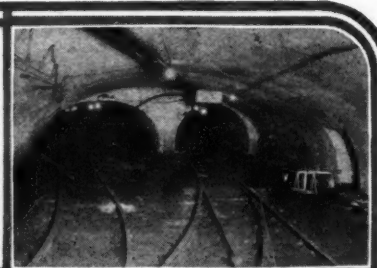


Bulletin Board at Washhouse

Boards like this are protected with glass doors and screen cloth and are installed under overhanging roofs. They are thus an excellent place for the display of posters and other safety bulletins.



## Underground Operation



### Almost Every Mine, Even if Not Electrified, Has Stray Currents; How to Find and Circumvent Them

May Appear in Mines Hitherto Free—With More High Tension Lines and Street Railroads Danger May Increase—Most Trouble Near Face Where Blasts Are Fired

By H. H. Hamilton

E. I. Dupont de Nemours Co.,  
Uniontown, Pa.

Need for the exercise of caution when handling electric blasting caps, squibs, or the like while in the proximity of rails, wires or other conductors is well recognized. The full hazard incident to stray currents, however, is not generally understood, and this subject is one well worthy of study by all those interested in electric blasting.

Only after strict and painstaking efforts have been made and failed to reveal the presence of stray currents, can it be stated with certainty that they do not exist in any given mine. It is possible also that an operation free from such currents today may be full of them a year hence.

#### MAY FIND CURRENTS ANYWHERE

Many people assert that stray currents are to be found only in mines using electrical machinery or haulage, and that they are the result of poor bonding. Observation, on the other hand, has proved that both of these statements are incorrect and that such currents may be found in many mines that have no electric wiring or machinery whatever. It is believed also, that the number of mines showing such currents will doubtless increase with the building of more high-tension lines and electric railroads upon the surface. Most electric roads operating through mining districts use 650 volts and operate upon what is termed a grounded system, or one in which current is continually passing through the ground from the point of application to that of generation.

Abstracted from the "Explosives Service Bulletin."

In mines using electric haulage or undercutting machines, the danger from stray current is ever present. On the main-haulage entries where the bonding is good, the leakage is small, but electric blasting caps are seldom handled in this part of the workings. It is the gathering motors and moving mining machines that set such stray currents going.

#### MACHINES CHARGE MINE

At times a whole section may be so charged that an electric cap may be set off almost anywhere. I have seen readings from one rail to another, or from a rail to the sprinkling line run as high as 40 volts and 30 amp., when a locomotive was working 600 ft. away.

Traveling mining machines, also, charge the track both inby and outby, the current thus set up traversing the water line, and effectively charging all its branches. Readings may frequently be taken from one rail to the other, from a rail to the pipe line or from a rail to wet ground between it and the pipe line that will show from 3 to 20 volts, depending on the distance from the machine or locomotive. I have successfully fired caps by placing one wire on one rail and the other on the other rail, or on the water line, when a traveling machine was 400 ft. away.

Electrically driven pumps leak current into both the suction and discharge lines, and readings can be taken at considerable distances from these machines by testing from these lines to a rail. I believe that the rails, in most working places, will

This article records two instances where mines operating without electricity have been found to be traversed by stray currents. Where mines are operated electrically readings taken between the rails and from the rail to the pipe line or from the rail to wet ground between it and the pipe line may show currents of from 3 to 20 volts.

fire a cap when a machine or gathering locomotive is working anywhere near by.

On the other hand, I know of a mine using compressed air haulage with no electrical machinery, where, at times, a reading of 5 volts and 1½ amp., or higher can be obtained, 1,800-ft. from the bottom of a 545-ft. shaft. At the last aircharging station, 1½ miles from the foot of this shaft, a reading of 8 volts and 5 amp. has been recorded upon frequent occasions. This reading was taken from the compressed-air line to the rail.

#### NO CURRENT FOUND NEAR SHAFT

The compressors are steam-driven and located on the surface. No electrical machinery is installed in the compressor room, except the 110-volt electric-lighting equipment. No current is found near the shaft bottom, which goes to prove that the electric energy found in this mine does not enter it from the shaft.

Along the main haulage, more than a mile from the shaft, where the air and water lines are covered with 10 in. of wet slate and dirt a cap may be fired by placing one wire on the dry rail and the other on wet dirt over the air line. A check of these conditions shows that this current is not regular, the readings vary as much as 4 or 5 volts when taken at fixed points; current may be found at all times however after proceeding 1,000 ft. or more from the shaft.

In another mine, where the only



electrical machinery installed is a pump driven by 440 volts of alternating current, which comes down a lead-covered cable in a borehole about 300 ft. from the machine. Men working along the track reported electricity on the rails. An investigation was accordingly made and although the voltmeter available would not register alternating current, it was found that an electric squib could be fired at times by placing the wires across the rail and the discharge line of this pump. All connections about this machine had been carefully examined, and were known to be in first-class condition, yet the current continued to return from this pump through the discharge line. If this pump were delivering to a sprinkling system, as is frequently the case, this stray current could probably be found in every working place in the mine.

Recently, a state inspector mentioned finding electricity in a mine that has no electrical machines either underground or on the surface. This is a slope with horse and rope haulage, and with steam and air pumps. An outside engine hoists from the bottom of the slope, a distance of about 7,000 ft. Tests were made from the wire rope and from the pipe line and steam line to the rails, with no trace of current. An engine inside at the bottom of the slope hauls from the workings with a tail rope a distance of about 9,000 ft. This machine is steam-driven and exhausts up a drillhole to the surface about 185 ft. above.

#### INDICATIONS VARIED

A test from the rope to the rail made at a point approximately 9,000 ft. from the outside showed 1 volt. Trials were made at a number of places, some of them showing a difference in potential of as much as 3 volts. These readings were not constant, however, but varied from nothing to the maximum above stated. Sometimes for several minutes no current could be detected by even a delicate instrument, then it would either jump suddenly to 3 volts or increase slowly to that figure. The difference of potential might remain stationary for some time or it might recede as it had grown.

Beyond the inner terminus of this rope haulage, numerous tests were made from the air and water lines to the rail without detection of any current. Trials were later made on the

inside rope after the mine was shut down, with results approximately the same as have been described.

Detection of stray current within a mine is not difficult. Most of those interested are using a small voltmeter, of the magnetic type. In selecting an instrument for this purpose it is well to procure one wherein the indicator is at rest in the center of the scale. A reading will thus be afforded regardless of the direction in which the current is traveling. Such voltmeters are inexpensive, easily carried, and the only change necessary to fit them for testing is to equip them with longer wires.

#### TESTING BY SQUIBS

Electric squibs offer a highly efficient means of testing for stray current. It is only necessary to touch affected wires, rails or pipes with the two leads of the squib. A current too weak to fire an electric squib would probably be also too weak to fire a blasting cap, whereas one strong enough to light a squib would certainly constitute a source of danger should the wires of an electric blasting cap come in contact with it.

When using squibs in gaseous mines, it is necessary to protect the flame from possible contact with inflammable gas. The means I have frequently employed for accomplishing this result is to carry a dry 4-oz. bottle with several good corks. Before starting a test I put the squibs into the bottle, cork it tight, and half-hitch the wires around the neck of the bottle, to prevent the cork from being pulled loose. In this way squibs may be fired in any quantity of gas with perfect safety.

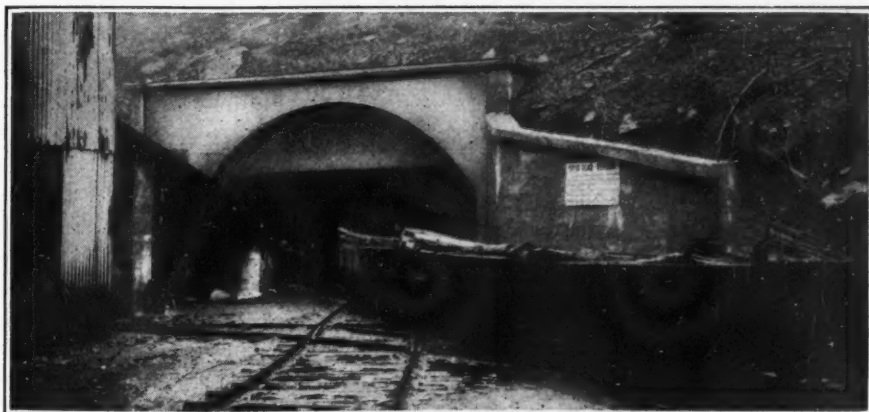
I doubt if anything will free a mine of stray currents, and I believe

that their number and intensity will probably increase from year to year. All current produced by a generator finds its way back to this machine no matter how far it is carried, and except in the mines and along electric railroads this entire current is supposed to make its return journey through the earth. To insure the transmission of the return current without undue loss electrified railroads are grounded at frequent intervals by connecting wires from the rails to pipe lines and other conductors buried along the line, and at all transformer stations one line is well grounded.

This shows that a large quantity of current is turned loose in the ground to find its way back to its point of generation. The earth always offers more or less resistance, depending upon its nature, the moisture contained and other conditions. It is my belief therefore that conductors in mines, and possibly the rails and pipe lines of quarries offer less resistance than the natural earth. Consequently, the current travels by this route.

#### MEANS OF RELATIVE SAFETY

Inasmuch, therefore, as there appears to be no means of eliminating this source of danger, the best course to pursue is to continuously guard against it. This may be done, first by using nothing but short-circuited electric blasting caps, and second, by always making sure that no stray current can find its way onto the lead wires before the final connection is made. It is a good plan to twist the ends of the leading wires together, whenever they are disconnected from the battery, or to place a clamp across them, which will form an effective short-circuit.

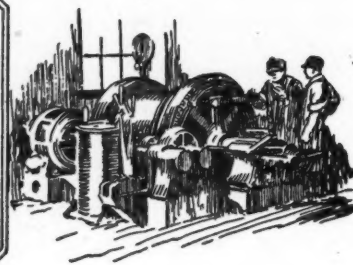


Trip Entering Slope Mouth at Macbeth, Logan County, W. Va.

A 200-hp. hoist pulls 5-car trips up the slope and into a 5-car rotary dump. A corner of the tippie can be seen to the left of the picture. This mine belongs to the Logan Eagle Collieries Co. It was formerly the property of the Macbeth Coal Co., then one of the interests of John Laing, Charleston, W. Va.



## Practical Pointers For Electrical And Mechanical Men



### Borehole Cable Is Hung on Shipping Reel

When it became necessary to have a larger direct-current feeder to supply No. 3 mine of the Pennsylvania Coal & Coke Corp., at Ehrenfeld, Pa., the electrical men were confronted with the fact that the existing borehole was too small for two single conductors of the size deemed advisable.

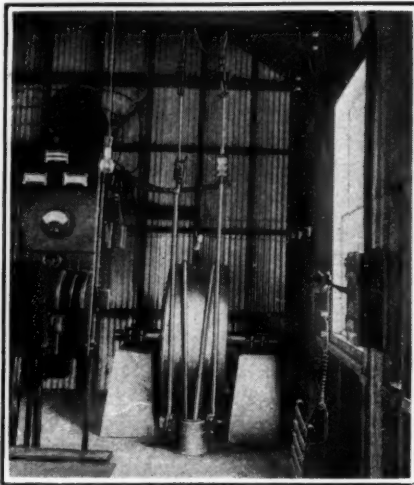
Apparently, but two courses were open, one to drill a second borehole, and the other to have made a special two-conductor concentric cable. Reaming the old hole to a larger diameter was out of the question as that would necessitate cutting power off the mine for a long period.

The first method was selected. The concentric cable, although containing two 1,500,000-circ.mil conductors, is considerably smaller than the inside diameter of the borehole casing. The method of suspension of this cable is rather unusual. It was ordered somewhat longer than was necessary for the 550-ft. borehole, with the possibility that it might later be moved to a deeper hole.

Suspension is by means of the reel on which the cable was received. The extra turns of cable are left on the reel and the end which is connected

to the pole line is first taken to the bottom of the reel and passed through a wooden clamp in common with the section of the cable just above the top of the casing.

Substantial timber blocking under the flanges of the reel take the weight. Although the outer or nega-



### Lowens, Supports, and Removes Cable

Reel, shaft, and bearings were recovered from the scrap pile. The borehole casing is large enough to permit cable splicers being used if necessary.

tive conductor of the cable is covered with jute, this conductor is bonded to the borehole casing at the top and bottom of the hole. The suspension has given no trouble during its several years of service and gives every indication of being good for an indefinite period.

The illustration above shows how the Central Coal and Coke Co. at its mines in Oklahoma used this idea in providing for the support of two 450-ft. 1,000,000 circ.mil cables. The reel in this case has a shaft and a set of bearings and can be used for removing the cables quickly and safely in case of trouble. This alone is an important feature in this cable support which is supplemented also with clamps on concrete piers. Each of these installations have been in service several years, attesting to the soundness of the idea and to the excellence of the workmanship entering into construction of the supports.

### Electrodes in Water Gage Make Fan Alarm

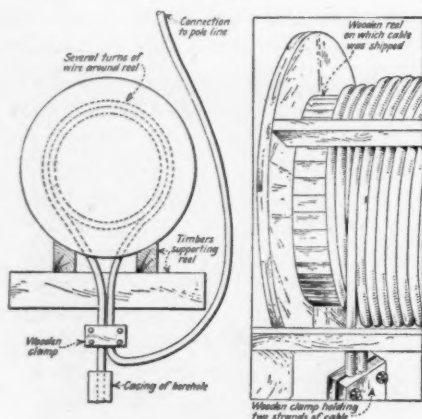
As a result of the general adoption of electric drive in place of steam it becomes necessary, especially at gassy mines, to provide a device to notify one of the topmen in case the fan ceases to function.

Only recently a commercial device of this kind was put on the market and many homemade alarms are now in use. Some depend on the motor current, others on the rotation of the fan shaft, and still others on the pressure or movement of the air.

One of these devices depending on pressure in use at the Bartley mine of the Pond Creek Pocahontas Co., McDowell County, West Virginia, is shown in the accompanying illustrations. An ordinary U-tube water gage is fitted on the inside with two electrodes which are close together, but do not touch. Instead of water, the electrolyte of an Edison battery is used in the tube.

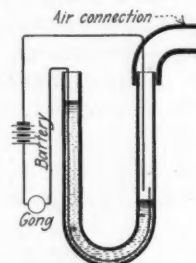
The gap between the electrodes is "shorted" by the electrolyte when the gage indicates no fan pressure, but is open when one side of the column is forced down away from the gap, by pressure. The alarm is sounded by an 8-in. gong mounted on the outside of the fanhouse. Six dry cells, connected in series, furnish the power to operate this bell. W. M. Powell, chief electrician, who "rigged up" the device, states that it has given satisfactory service.

The electrolyte is low on one side so long as the fan is running, mak-



### Bottom of Reel, and Clamp

The feed end of the cable is passed through the clamp with the down strand then up to the pole line connection. By using concentric cable, two 1,500,000 circ.mil conductors are taken through a borehole which is too small for two single-conductor cables.



### Showing Battery Box and Gage

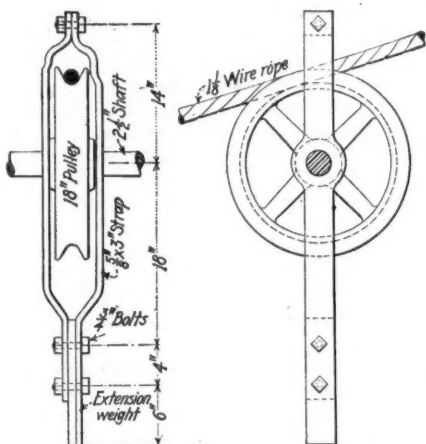
In case of a suspension of ventilation the electrolyte in the water gage comes to a level eliminating the gap between the electrodes, thus completing the circuit which rings the gong.



ing a gap between the electrolyte and the electrode, thus cutting off the current.

### Guide Keeps Rope on Idler

A device for preventing hoisting ropes from jumping off idler sheaves, says L. P. Moore, in *Engineering & Mining Journal-Press*, has been successfully used at the Stevenson Mine of the McKinney Steel Co. on the Mesabi Range. The guide is constructed of two  $\frac{3}{8}$  x 3-in. iron straps, bored to pass over the idler shaft as shown in the accompanying illustration. These are shaped to give a



Guide Is Always Operative

A weight is attached to the lower end of this guide yoke, which keeps the frame always in an approximately upright position or one such that the rope cannot bind. The frame is pushed along the shaft by the hub of the idler as the position of the rope changes.

small clearance to the upper rim of the idler sheave.

The side pieces are extended so as to bring the center of gravity of the guide below the center of the shaft. There is plenty of room for the hoisting rope to play, but the guide prevents it from leaving the groove of the sheave. Little wear takes place as the guide is moved along the shaft by the sheave hub.

### How to Force Commutator On Without Bending Shaft

"While using a hydraulic press to force a commutator on a small core with a long shaft," says Samuel Carbat in the *Industrial Engineer*, "I applied a heavy pressure directly to the end of the shaft in order to force the commutator, which fitted tightly. As a result of this pressure I bent the shaft badly, which meant considerable extra work. Since then I have always placed over the shaft a piece of pipe that is longer than the shaft itself, and have had no more trouble.

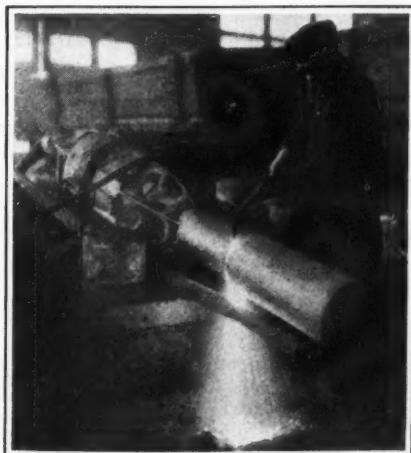
"Repairmen do not always realize that the shaft of a small motor is rather easily bent and that it is not an easy matter to get it straight again. If armature cores of any size are handled roughly or allowed to drop on the floor there is danger not only of bending the shaft, but also of burring or otherwise injuring the laminations. Such injuries may be the unsuspected cause of heating of the armature, due to eddy currents.

### Cutting Torch Adapted for Use With Illuminating Gas

Heretofore the gases employed for cutting and welding with the oxygen torch have been almost exclusively acetylene and hydrogen. Following a comprehensive study of the economic needs of the various classes of work, however, the General Electric Co. has substituted illuminating gas in their place. A special oxy-illuminating-gas torch has been developed for this purpose and is now being used in steel foundries for cutting off risers having a thickness varying from 1 to 20 in.

This tool also is used for cutting intricate shapes from steel plates by machine. Its successful application throughout a wide range is said to demonstrate the practicability of this tool for blowpipe cutting. It is asserted that an appreciable saving made in the cost of gas demonstrates its economic importance in a field to which it has been a stranger up to the present.

Tests are said to have proved that illuminating gas is cheaper in ma-



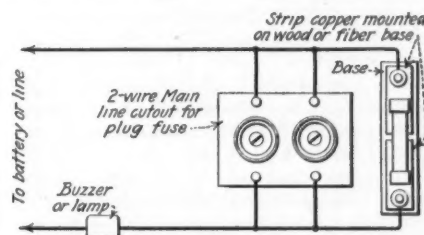
Cutting Steel with Illuminating Gas

Oxy-illuminating gas torches are a new development. The torch, in this instance, is shown removing a 15-in. riser from a nickel-steel casting. It is said that illuminating gas is cheaper in machine cutting than either hydrogen or acetylene and that the speed with which the cut is made after once it is started is approximately the same for the three gases.

chine cutting than either hydrogen or acetylene, and that the speed with which the cut is made after it has once been started is approximately the same for all three gases. The advantages inherent in the use of illuminating gas are claimed to be: availability, elimination of delay in the handling of tanks, low cost and safety. Owing to the chemical and physical properties of the gas it can be used in a torch equipped with a superheater. Thus marked economies are said to be effected in the quantity of oxygen required by the cutting jet.

### Simple Testing Block for Plug And Cartridge Fuses

Wherever fuses are used in any quantity some convenient yet inexpensive device is needed for testing them. Otherwise, says N. W. Blanchard in the *Industrial Engineer*, much



Two-Wire Cutout for Testing Plug Fuses

Cartridge fuses are tested by touching the ends to two copper strips mounted on a fiber base. A lamp or buzzer may be used as an indicator.

time can be wasted and much inconvenience caused by trying out several fuses in a circuit before one is found that is suitable for use. Oftentimes carelessness in replacing bad fuses with some that have not been tested is responsible for a hurry-up call for an electrician.

The fuse-testing block shown in the accompanying sketch is readily made. It consists of a two-wire mainline cutout for testing plug fuses, the screw shells being slit down the sides so that the fuses can be slipped in easily, and two strips of copper mounted on a fiber base of the size required for testing cartridge fuses. A buzzer or lamp is connected in the circuit as shown to indicate whether a fuse is blown. The source of current supply is connected to the binding posts.

This device mounted on a test board within handy reach will be found useful and satisfactory.

Placed near the equipment using fuses it will save much time in getting the unit back into service.



## News Of the Industry



### Congress Debates but Doesn't Act On Coal Legislation; Copeland Says Mine Owners Should Obtain Relief

Coal legislation continued to be the subject of much debate in Congress last week, but the likelihood of any real action is as remote as ever. Adjournment is expected July 3. Representative Boylan (Democrat, New York) opposed adjournment until legislation is enacted. Representative Treadway (Republican, Mass.) suggested that members take action to force consideration of legislation by the House. Representative Black (Democrat, New York) urged that the President call members of the House interstate commerce committee and obtain action on legislation by the House.

If advocates of legislation would settle the question with reference to anthracite, said Representative Murphy (Republican, Ohio), Congressmen from bituminous districts would let them go ahead. Bituminous mining is in a bankrupt condition, he said, and should not have further burdens placed upon it. Ohio, West Virginia and other bituminous operators are satisfied with present conditions and do not want fetters placed upon them. He said most of the argument for coal legislation had been made by members knowing nothing about the coal business and constituted "bunk." "There is already too much regulation," he said.

Representatives Treadway and Boylan professed to have observed evidence of a combination of bituminous and anthracite interests to prevent legislation, which was proved by the attitude in the House of members from coal districts. Representative Murphy denied any combination of coal interests in Ohio, and said twenty thousand miners are idle in one county in his district. He said coal operators had been regulated and robbed. He said the trouble was not with the miners, but with the coal barons in New York.

#### Drab Picture in Illinois

Miners in Illinois are not averaging more than \$1,000 per year owing to non-union production of West Virginia and Kentucky, said Representative Wheeler (Republican, Illinois). He criticized unreasonable freight rates, which he said operate against Illinois mines, and read a letter from Frank Farrington, president of the Illinois miners' union, to the Interstate Commerce Commission asking readjustment of rates.

If the mines were nationalized, said Representative La Guardia (Socialist, New York), coal would be sold in New York at the same price for each size. It would produce economies and efficiencies in the industry and prevent its inflation. He said anthracite operators are planning to inflate the industry by \$400,000,000.

According to Representative Taylor (Democrat, West Virginia) no emergency exists in the coal industry and there is no occasion for legislation for its control. The public can always obtain coal at fair prices, and bituminous is an anthracite competitor. He objected to legislation against bituminous which is designed to give the country anthracite.

#### Sees No Danger of Emergency

Representative Wyant (Republican, Pennsylvania) said that as the anthracite situation is settled for five years and the non-union bituminous industry can furnish more coal than the country needs, there is no danger of an emergency in the future.

Representative Ragon (Democrat, Arkansas) said that while he did not favor any regulation and also opposed nationalization, he feared that sooner or later sentiment would grow for strict regulation of the industry. Another condition like the recent anthracite strike, said he, might force nationalization.

Emergencies arose because of the extravagant and outrageous prices charged by retailers, said Congressman Taylor. Fact-finding would break down competition by exposing trade secrets, and the industry is already regulated by the anti-trust act.

Charging profiteering by retailers, Representative Wyant favored a license system for these dealers, their licenses to be revoked if they charged unreasonable prices. Representative Ragon said the trouble is not due to mine prices, but to prices charged after the coal leaves the mine until it is purchased by the consumer.

"Then why regulate operators?" asked Representative Vinson (Democrat, Kentucky).

"I do not favor regulating operators, but the coal industry should have some kind of regulation," said Representative Ragon.

Representative Wyant said the states

or cities should regulate retail distribution, and Mr. Ragon agreed.

Congress has been "inexcusably and criminally negligent in not dealing with the coal situation," said Representative Fish (Republican, New York). He said House leaders had announced some time ago that a coal bill would be passed and sent to the Senate for enactment during the present session. He said the coal bill had been killed in committee by a coal lobby and Congressmen from coal states including Ohio, Indiana, Pennsylvania, Illinois, Missouri, Kentucky, West Virginia and Alabama.

Five members of the House committee on interstate commerce represented bituminous districts, said he, which explained why no action had been taken. He did not advocate government operation of mines or price fixing, but insisted that the government should have some power to regulate the anthracite industry. "There should be publicity regarding production costs, profits and quality of coal," he said. He warned of the possibility of a strike when the bituminous agreement expires next April. He said the principles of the railroad labor mediation act recently passed by Congress should be applied to the coal industry to settle disputes, and that there should be legislation to control distribution of coal in an emergency.

#### Copeland Deplores Lobbying

In urging action on his bill, Senator Copeland (Democrat, New York) said a coal lobby is working against the measure. He laid a large portion of the blame at the door of Senator Neely (Democrat, West Virginia).

"Fact finding by the Bureau of Mines would determine what is wrong with the industry and what can be done to protect it," said Senator Copeland. "Publicity as to quality, quantity, profits, earnings and living conditions will enlighten and insure a proper public attitude toward coal. There should be some relief to mine owners. There are too many mines. The anti-trust law should be relaxed so as to permit the formation of marketing associations which would enable coal to be readily sold at lower costs to consumers, but this action must be based on facts. The bill does not take away mines from the owners nor disturb their legitimate business."

Senator Copeland said he would bring the bill up before the Senate at every opportunity in the hope of obtaining action at this session. He said coal dealers are opposing the legislation at the suggestion of mine owners.



## West Virginia Union Asks Impeachment of Judge Who Refused Injunction

Impeachment of Judge I. Grant Lazelle of the Monongalia County (W. Va.) Circuit Court, was asked by the United Mine Workers in a formal petition to Governor Howard M. Gore made public by the union at Fairmont, W. Va., on June 22. Judge Lazelle on June 9 refused to grant the miners' union an injunction against the Cleveland & Morgantown Coal Co., the Pursglove Coal Mining Co., the Arkwright Coal Co. and the Connellsville By-Product Coal Co., operating in the Scott's Run field. The action was brought by the union in an effort to enforce the Jacksonville wage agreement.

The petition, which was signed by J. L. Studdard as president of District 31 of the miners' union, and C. F. Davis, secretary-treasurer, urged that if an extra session of the Legislature is called to consider water-power legislation, the call be made broad enough to embrace impeachment proceedings. If the Legislature is not called to consider water power, the petition said, "we feel it should be convened to investigate the official conduct of Judge Lazelle."

Charges were made against Judge Lazelle, which, the union officials said, "in our opinion constitute maladministration, corruption, incompetency and neglect of duty." The petition charges "that on July 22, 1920, Judge Lazelle, with two brothers and a sister, made a lease to James A. Paisley of coal lands in Monongalia County and that under its terms they are now receiving \$60,000 annually as a minimum royalty for the coal lands covered in that lease."

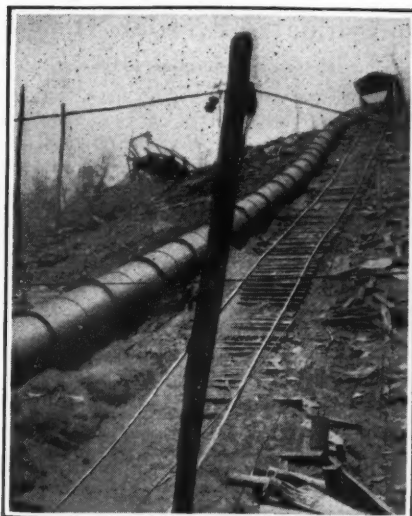
### Says Judge Had Interest

Mr. Paisley, the petitioners assert, "is the owner and directing head of the Connellsville By-Product Coal Co. and the Arkwright Coal Co.; that these facts at the time of the hearing were known to the Judge and unknown to the plaintiffs and that he was interested in the result of the litigation."

Two other actions involving similar issues with the union as plaintiff and the Cleveland & Morgantown Coal Co. and the Pursglove Coal Mining Co. as defendants were cited, the union officials alleging that at the time they were heard relatives of Judge Lazelle "were receiving large minimum royalties from coal lands, including a lease to Joseph Pursglove, owner and directing head of those companies."

Issuance of injunctions to non-union coal companies "without notice" to the defendants also is alleged, and the communication further charges that Judge Lazelle "upon assembling the Grand Jury from time to time instructed them in private as to the rights of striking coal miners." A final charge is made that "members of the United Mine Workers cannot receive a fair trial in Judge Lazelle's court."

Under the Constitution of the state the power to bring impeachment is vested in the House of Delegates and the power to try an impeachment is vested in the Senate, the Governor



Close-Up of Edgewater Coal Co.'s Pipe Chute near Hellier, Ky.

Taken with the camera turned up the hill, the inclination of the pipe appears to be less than it really is. The tube is of steel, is 36 in. in diameter, and has a flanged joint every 10 ft. Another company, the McKinney Steel, in the same vicinity also uses a pipe from mine to tippie.

having no authority in the matter. Therefore the action of the union in bringing the matter officially to the attention of the Governor is regarded as being for propaganda purposes more than for anything else.

Judge Lazelle, in commenting on the action of the union, said: "I have read the allegations, but would prefer to make no comment at this time."

## Coal at \$300 a Ton

Coal for the mounted police, missionaries and traders dwelling at the various posts along the treeless coast of the western Canadian Arctic costs \$300 per ton. Only one ship a year is loaded with coal at Vancouver for delivery at Herschel Island, Shingle Point, Baillie Island, Tree River, Cambridge Bay and Fort Brabant. To reach the last-named place the steamer has to cover exactly 4,530 miles.

Every white resident along this coast is required to order his supply one year in advance. Because of the possibility of the steamer not reaching the posts every year, the residents try to keep more than a year's supply on hand.

In addition to the freight costs on this long haul, the unloading of the coal presents expensive difficulties. The sea about most of these trading posts is so shallow that the steamer must anchor several miles offshore. In order to meet this difficulty it carries on deck two 40-ft. scows and a small towing launch. The scows are dropped in the water by the steamer's derricks at each stop. Upon them the coal is loaded in 100-lb. sacks and towed to shore by the launch. The coal is then unloaded by a crew of Eskimos, who are paid \$1 per hour for their labor.

## See Mechanization Only Hope For Illinois Mines

Only through mechanization of their mines can Illinois operators hope to compete with western Kentucky and other non-union fields. This was evidenced at the summer meeting of the Illinois Mining Institute, which took place aboard the steamboat "Cape Girardeau" on the Mississippi River, June 24 to 27. Two operating officials openly voiced the belief that the mines of their respective companies which are loading coal mechanically would now be idle if not equipped with the necessary machines, and others inferred as much.

The larger part of the time allotted to business on the river trip was devoted to papers, talks and discussions on the mining and preparation problems encountered in mechanical loading.

The information furnished as to how mechanically loaded coal is being cleaned at Middle Western mines indicates that much progress has been made in the solution of a problem which too many operators hold as their reason for sticking to manual loading. The general sentiment of the Institute members is that the majority of mine owners who lack experience with machine loaders give too much weight to the problem.

Safety practices were discussed from such broad angles as to make it apparent that at least as much effort is being made to make life secure as to produce coal at less cost. An innovation was a paper on procedures for safety in the mines of a lead company in Missouri. The interest of those who took the 200-mile boat trip up the Mississippi from St. Louis to Fort Madison and return was intensified by a paper which dealt with the geology of the territory traversed. Stops were made at Keokuk, Iowa, where the giant hydroelectric plant of the Mississippi River Power Co. was inspected, and at several towns of historic interest. All that transpired at this meeting will appear in next week's issue of *Coal Age*.

## \$61,500 Bid for Stripping Value at Half Million

The Pigeon Creek Coal property, a large stripping plant located one and one-half miles southeast of Boonville, Ind., was placed on public sale at Boonville June 21. The Patoka Coal Co., the principal owners of which are James P. Goodrich, former Governor of Indiana, and J. W. Moorman, made the highest bid of \$61,500. W. R. Bootz, of Evansville, Ind., a representative of the bondholders in Chicago, participated in the bidding.

The sale was subject to the approval of the Warrick County Circuit Court at Boonville, of which Caleb J. Indsey is judge. The value of the Pigeon Creek property, consisting of 724 acres of coal land and complete stripping equipment, has been estimated at \$500,000. It has been operating since Dec. 22, 1925, under the management of L. A. Folson, receiver, and according to information given out, has shown a profit during that period. The plant is being sold to satisfy liens of approximately \$200,000.

## Mine Accidents Kill 161 Workers in May; Five Month Total Low

Accidents in coal mines of the United States in May, 1926, caused the death of 161 men, according to information furnished by state mine inspectors to the U. S. Bureau of Mines. Of this number 122 deaths occurred in bituminous mines and 39 in anthracite mines. The May (1926) fatality rate for bituminous mines was 3.12; for anthracite, 4.84, and for the industry as a whole, 3.42, based on a production of 39,059,000 tons, 8,054,000 tons and 47,113,000 tons, respectively. In May, 1925, the rates were 4.28, 5.82 and 4.57, based on a production of 35,474,000 tons of bituminous coal, 7,898,000 tons of anthracite, and 43,372,000 tons in all.

During the first five months of the current year the production of bituminous coal totaled 225,514,000 tons; anthracite output was 27,317,000 tons. The fatality rate per million tons for this period was 3.81 for bituminous mines as compared with 3.82 for the five-month period last year; the anthracite rate was 4.43 for the present year as compared with 6.31 last year. For the industry as a whole, the rate was 3.88 this year as compared with 4.21 last year.

The records covering "major" disasters—causing the death of 5 or more men—for 1926 to date show that in 8 separate accidents 195 men lost their lives. Last year's record for the same period showed 7 separate disasters and 162 deaths.

Comparison of the principal causes

## Washington Retailers Defy Senate Committee

Retail coal merchants of the District of Columbia have flatly refused to obey a subpoena, issued by the Senate District committee, for the production of their records. They assert the subpoena is beyond the power of the committee and that to comply literally would necessitate a practical suspension of business. The subpoena calls for ledgers and other account books for the past ten years, balance sheets, sales by sizes and grades, cost allocations, depreciation allowances, lists of stockholders, payrolls and purchase and sales contracts.

The firm stand of the coal men appears to have nonplused the committee, which has taken no final action on this challenge to its authority. In the meantime it has been suggested that the retailers try again to convince Comptroller General McCarl that a profit and loss statement would disclose whether they profited during the recent anthracite strike.

of accidents thus far in 1926 with the record for January to May, 1925, shows a decrease in falls of roof or coal, haulage, explosives and electricity and a slight increase in gas or dust explosions. The comparative rates were as follows:

	Year 1925	Jan.-May 1925	Jan.-May 1926
All causes.....	3.811	4.213	3.880
Falls of roof or coal....	1.842	1.868	1.800
Haulage.....	.615	.686	.649
Gas or dust explosions.....	.590	.852	.874
Explosives.....	.174	.205	.119
Electricity.....	.144	.132	.099

## Bittner Again Calls Out All Miners Not Under Contract In Northern West Virginia

Northern West Virginia miners were called out in a general strike order issued June 29 at Fairmont by Van A. Bittner, international representative of the United Mine Workers in upper West Virginia. The order becomes effective July 5. "Every miner in northern West Virginia not under contract" is urged to join with the miners' union in a "fight for independence."

Bittner's call asserted that at the instance of men working in non-union mines, the union had conducted an intensive campaign of organization and that "the great majority of the men working in the non-union mines where the operators abrogated their wage agreement with the United Mine Workers" are now members of the union.

Strike calls were issued by Bittner in this field on April 1 and Oct. 26, 1925, and for more than a year strike headquarters have been maintained.

Practically all mines in the field are operating non-union, paying wages substantially the same as the 1917 scale, which is about 30 per cent lower than the union agreements signed in Baltimore and New York in 1924.

The union is preparing to appeal from the refusal of the Monongalia Circuit Court to grant an injunction to restrain four operating companies from paying any wage other than that called for in the 1924 contracts signed by these operators.

## Coal-Mine Fatalities During May, 1926, by Causes and States

(Compiled by Bureau of Mines and Published by Coal Age)

State	Underground											Shaft				Surface							Total by States			
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Explosion of gas or coal dust.	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes.	Railway cars and locomotives.	Other causes.	Total.	1926	1925
Alabama.....	1						1					2													2	11
Alaska.....																									0	0
Arkansas.....																									0	1
Colorado.....	2	2	1									5													5	4
Georgia and North Carolina.....																										53
Illinois.....	4		5	2			1					12													12	6
Indiana.....			1									1													1	0
Iowa.....																									0	0
Kansas.....				3	1							4													4	1
Kentucky.....	6		3									9													10	12
Maryland.....	1											1													1	1
Michigan.....																									0	0
Missouri.....																									0	0
Montana.....																									0	0
New Mexico.....																									0	0
North Dakota.....																									0	0
Ohio.....	3		2		1	1						7													8	3
Oklahoma.....	1								1			2													2	1
Pennsylvania (bituminous).....	20	1	2							1		25						1							26	20
South Dakota.....																									0	0
Tennessee.....			3									3													3	0
Texas.....																									0	0
Utah.....	3											3													3	1
Virginia.....	2		1									3													3	4
Washington.....																									0	1
West Virginia.....	23	2	10		1				1			37								1			2	3	40	33
Wyoming.....	2											2													2	0
Total (bituminous).....	68	5	28	5	3	1	2		3			116						1	1				4	6	122	152
Pennsylvania (anthracite).....	14	1	5	10	1	2					6	39												39	46	
Total May, 1926.....	82	6	33	15	4	3	2		3		7	155						1	1				4	6	161	
Total May, 1925.....	61	6	27	73	5		4		8		3	187	1				1	2			1	2	5	10		198



## British Government Presses Coal Bills Despite Threats by "Emperor" Cook; Union Official's Truce Offer Ignored

Introduction of the government's bills for the reorganization of the mining industry and an unexpected suggestion from "Emperor" A. J. Cook, secretary of the British Miners' Federation, that the men return to work at the rates in effect prior to May 1 pending a settlement, were the high-water marks in developments in the British strike situation last week. Neither proposal, however, was acted upon, but the government indicated its intention to press for the passage of its legislative program.

The first of the two bills introduced by the government is entitled the Miners' Industry Bill. This makes the necessary provisions for voluntary amalgamation of undertakings under the control of the Railway and Canal Commission. This commission is authorized to confer the right to work minerals without regard to restrictions in existing mining leases. The commission also is authorized to tax royalties at the rate of one shilling per pound to provide bathhouse facilities at the pits. Under the bill the Ministry of Labor is empowered to regulate the recruitment of workers. Profit-sharing schemes are made legal by the proposed law.

The second bill allows miners to work eight, instead of seven, hours during the next five years. This measure, however, is permissive, not mandatory.

When the first bill passed the second reading in the House of Commons on June 23, Vernon Hartshorn, Laborite, made a plea that legislative action be suspended and asked that the parties get together in a round-table conference to compose their difficulties. This plea was supported with reservations by Sir Leslie Scott, Conservative, and indorsed enthusiastically by David Lloyd George, Liberal.

Sir Laming Worthington-Evans, Secretary for War, however, opposed

the plan until there was some assurance that spokesmen for the miners were actually empowered to negotiate for them. The Baldwin government, he pointed out, had started negotiations with the Trades Union Council before the general strike, only to discover that the Council had no power.

Debate on the eight-hour bill opened in the House on Monday, June 28, when the second reading of the measure was moved by Sir Arthur Steel-Maitland, Minister of Labor. A vote is expected early this week. Leaders of the Labor Party probably will try to postpone action by offering a series of amendments to the bill, but the Conservatives express no concern over that opposition. Defense of the bill will be led by W. C. Bridgeman, former secretary of the mines department of the Board of Trade and one of the government negotiators in the coal parleys of last year.

"The reasons why the government introduces this bill," said Sir Arthur Steel-Maitland, "are based on the plain facts of the industry, which are convincing and overwhelming. If any one takes the great coal-exporting districts, he will find that on the basis of last December quarter, apart from the subsidy, on the hours and wages then existing, 88 tons out of every 100 produced in Scotland were produced at a loss, 90 tons out of every 100 in South Wales, 97 tons in Durham, and the whole tonnage in Northumberland. Suggestions for nationalization or unification of the coal industry will not meet the situation. The only way to meet it is to provide for an extension of the hours of labor."

Mr. Cook's right-about-face from caustic belligerency came on Friday, when he intimated that if the government would withdraw its bills the miners would return to work on the old terms, plus the financial assistance already promised by Premier Baldwin.

He made it plain, however, that the settlement to follow should not be based upon compulsory arbitration.

"Is it not time to declare an armistice"? he asked. "Is it not time the government should withdraw their bill for longer hours and agree to reopen the pits at once on the terms existing in April? Then arrangements could be made with the workmen's representatives whereby a settlement could immediately be arrived at. Let the government hold out the hand of friendship by making a definite and clear attempt at a peaceful settlement. If they do so on these lines I and my colleagues would give every assistance, provided the miners are guaranteed economic security."

The meeting of the Trades Union Congress originally scheduled June 25 and subsequently postponed until June 30, has been called off until after the coal strike has been settled. Labor leaders were fearful that a discussion of the Congress' policy during the general strike would result in recriminations between executives of the miners and the other trades unions which would weaken labor solidarity.

Mr. Cook, who surprised everybody with his talk of compromise last week, returned to his old truculent form on June 28, when he threatened to call out the safety men unless the government abandoned its legislative program. This threat left the Baldwin party unmoved, but brought a sharp retort from Robert Shrikie, general secretary of the National Federation of Colliery Enginemen, Boilermen and Mechanics, who exclaimed that he was sick and tired of hearing "Emperor" Cook talk about withdrawing the safety men!

"Mr. Cook knows perfectly well that neither he nor the Miners' Federation have power to withdraw them," he said. "That matter is in the hands of my own federation, which decided on its policy prior to the stoppage. Up to the present we have not changed that policy, nor have we thought of reconsidering the agreements reached with the various coal owners' associations throughout the country."



British Miners Who Refuse to Work for Their Employers Mine "Bootleg" Coal

At Dudley, Worcestershire, England, miners are uncovering feverishly a newly discovered coal seam, sinking small pits through the surface wash. About 3,000 tons a week is said to be mined by this method. Dudley is administratively in Worcestershire,

but closely surrounded by the irregular outline of Staffordshire, one of the important mining counties. Someone with unconscious humor, describing this field, has said: "The miners are sleeping in the pits as they dig them."

Wide World Photos

## Steamer Chilore Loads 20,055 Tons of Coal in 5 Hours and 21 Minutes

A new record in coal loading was established at the Sewalls Point piers of the Virginian Ry., at Norfolk, Va., on June 21 when the steamship "Chilore" of the Ore Steamship Co. fleet took on 20,055 tons of low-volatile coal in an actual loading time of five hours and twenty-one minutes. The vessel reported and docked at 4:40 a.m., commenced loading at 7:15 a.m., finished at 12:36 p.m. and sailed for the Canal Zone at 4 p.m.

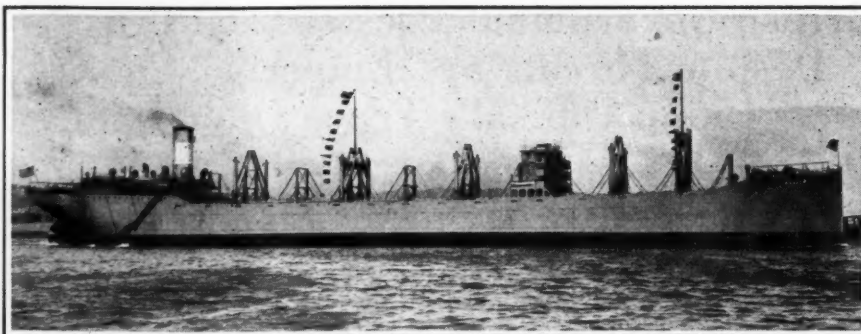
The cargo was loaded for the Panama R.R. and the coal was furnished by Castner, Curran & Bullitt, the Wyatt Coal Co. and the Raleigh Coal & Coke Co. Coal was dumped into the vessel—the queen of the fleet—at the rate of 3,746.6 tons per hour, or 62.5 tons per minute. The previous record for fast loading had been made on April 22, when the Virginian piers dumped 11,875 tons into the "Lemuel Burrows" in two hours and fifty-five minutes.

### Extra Allowance on "Chilore"

Under the Panama R.R. contract with the Ore Steamship Co., the latter—a subsidiary of the Bethlehem Steel Corporation—allows the Panama R.R. 48 hours to complete loading and discharge on all vessels of the fleet other than the "Chilore." On that vessel the allowance is 72 hours. The time begins to run when the piers are ready to operate, so that in the case of the loading last week the railroad company is charged with five hours and thirty-six minutes since the piers were open at 7 a.m.

This cargo will be discharged at the Cristobal coaling plant of the Panama R.R. and the "Chilore" will proceed down to Cruz Grande, Chile, for a cargo of nitrates. The Cristobal plant, located on the north end of Telfer's Island, where the old French canal joins the dredged channel, has a pier 458 ft. wide and 1,065 ft. long. On each side is a slip 300 ft. wide and 40 ft. deep. The inshore of Cristobal side is used as an unloading wharf and the offshore side as a reloading wharf.

The Cristobal plant has a maximum storage capacity of 405,000 tons. The



Steamship "Chilore"

handling equipment consists of two traveling bridges for stocking and reclaiming, with four moving unloader units and the same number of reloader units. The unloaders carry 2.5-ton buckets with a rated capacity of 250 tons per hour. These discharge coal into cars running on an elevated track. The cars are dumped at desired points. The reloaders have 5-ton buckets with a rated capacity of 500 tons per hour. Coal thus reloaded is delivered by hoppers and valves to the coal cars, which carry it to the reloaders, wharf bunker or some other point by means of the bridges.

With this equipment operating at normal rated capacity, the Cristobal plant should be able to unload the cargo of the "Chilore" in twenty hours, three and one-third minutes.

### Hard-Coal Tax Upheld by Penna. Supreme Court

The constitutionality of the tax of 1½ per cent on anthracite "prepared for market," according to the annual report of mining companies filed in accordance with the act of May 11, 1921, was again held to be constitutional under an opinion filed at Philadelphia June 26 in the Supreme Court of Pennsylvania by Justice Frazer.

The court's decision was handed down in the appeal of the Hudson Coal Co. from the action of Common Pleas Court of Dauphin County in refusing to admit certain evidence in the company's contest of the Commonwealth's claim for \$42,429.62. This sum was assessed with the mining company's report for the year 1922.

## Railways and Utilities Use Coal Efficiently, Bureau Of Mines Figures Show

By Paul Wootton

Washington Correspondent of *Coal Age*

Special studies by the Bureau of Mines are bringing together additional facts as to increased efficiency in the use of coal. The Class 1 steam railroads in 1917 burned 176 lb. of coal per 1,000 gross ton-miles. In 1925 by close fuel economy this was reduced to 140 lb.—a saving of over 20 per cent.

In 1917 the Class 1 railroads used 19.4 lb. of coal per passenger train car-mile. By 1925 this had been reduced to 16.1 lb.—a decrease of 17 per cent.

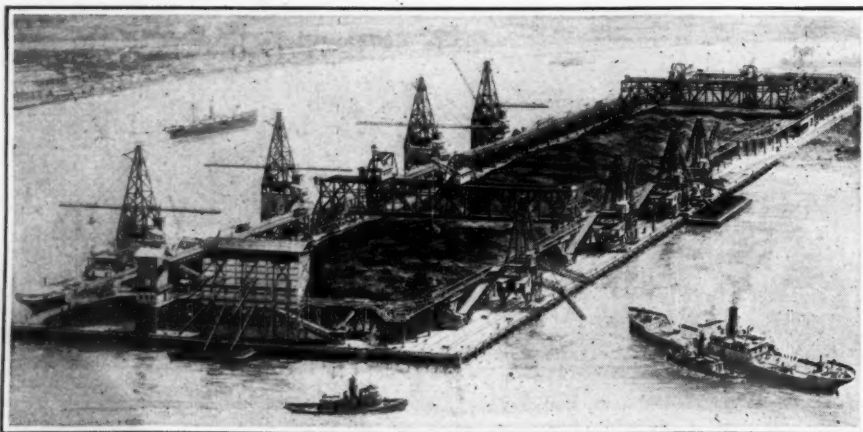
Greater efficiency in the central stations of the electric industry has resulted in a reduction of coal consumption from 3.2 lb. in 1919 to 2.1 lb. per kilowatt hour in 1925—a decrease of 34 per cent in the amount of coal used per unit of power generated.

In the manufacture of pig iron there has been an improvement in the process of making coke and in the operation of the blast furnace itself. Between 1918 and 1924 the amount of coking coal used in the production of a ton of pig iron dropped from 3,577 lb. to 3,248 lb.—a decline of nine per cent. This takes no account of the saving in fuel through the recovery of gas, tar and light oils at byproduct coke plants. Since 1913 this has amounted to 11 per cent.

Over a longer period the changes are even more pronounced. In 1899 the Edison Illuminating System of Boston was using 5.8 lb. of coal per kilowatt hour. In 1925 the average for the system had dropped to 1.5 lb.—a decrease of nearly 75 per cent in a quarter of a century. The Commonwealth Edison Co. of Chicago in 1900, before introducing the steam turbine, was using 7 lb. of coal per kilowatt hour. In 1925 this had been cut to 2.06 lb.—a decrease of 70 per cent.

The substitution of byproduct for beehive coke ovens during the last twenty-five years has resulted in a reduction in the unit fuel consumption of 17 per cent in this industry, which consumes about one-sixth of the total output of bituminous coal.

Had there been no improvement in the utilization of fuel since 1918 the market for bituminous coal apparently would be 60,000,000 tons greater today. This shrinking of potential business does not take into consideration the amount of coal displaced by petroleum products or waterpower.



Cristobal Cooling Station, in the Canal Zone



## Canadian Fuel Board Presents Twelve Points To Solve Coal Problem

The special committee named to investigate Canada's coal supply and suggest ways to make the Dominion less dependent on foreign sources of supply made its final report to Parliament at Ottawa June 22. The report contained twelve recommendations, as follows:

(1) That trial shipments of Alberta western coal be made by rail and lake under the supervision of the Dominion Fuel Board, in order to ascertain the possibilities of moving Alberta coal in large volume with modern loading and unloading facilities.

(2) That such legislation be enacted as will encourage the production of domestic coke from Canadian coal, and make Canada as far as possible independent of foreign sources of supply of domestic fuel.

(3) That the government invite the co-operation of the provinces in the establishment of standards of quality, and regulations governing the shipment and the marketing of coal and coke.

(4) That the Dominion Fuel Board, which has greatly assisted in the effort to solve Canada's fuel problem, be encouraged to continue and enlarge its work.

### Urge Duty on Hard Coal

(5) That the duty of 50c. per ton, now imposed on bituminous slack coal, be extended to apply to anthracite small coal, known to the trade as "buckwheat and pea coal."

(6) That the government consider the question of granting some assistance to encourage the enlargement of the markets for Maritime coal.

(7) That the exemption from duty of foreign coal for bunkering ocean-going ships be withdrawn.

(8) That the harbor commissions of Montreal, Toronto and Hamilton be asked to co-operate in arranging better coal-handling facilities at their ports, in order that dispatch may be effected in unloading and loading coal from boats entering their harbors, and that the said harbor commissions be asked to make substantial reductions in harbor dues on Canadian coal.

(9) That the Railway Commission be asked to ascertain and report upon the cost of carrying coal from the Alberta mines to Port Arthur and Fort William.

(10) That early consideration be given by the government as to the advisability of renewing the vote in the estimates for the purpose of assisting the rail movement of Canadian coal, of which the unexpended balance was \$180,000.

(11) That, before sanctioning any scheme by the harbor authorities of Vancouver to erect public coal-bunkering facilities, the matter be carefully considered as regards what effect such action might produce on the coal mines of Vancouver Island, inasmuch as coal might be brought in as ballast from other countries at such a low price as would result disastrously to the local coal mines.

(12) That it would be advisable to have an investigation and report made

## Union Pacific Old Timers Hold Annual Meeting

The Old Timers' Association of the Union Pacific Coal Co., composed of employees who have been in service ten years or more, held its second annual meeting at Rock Springs, Wyo., June 12. Twenty-four have been in service 40 years and over; one, James Moon, has a service record of 52 years. Twenty-six nationalities are represented in the membership of 354, of whom 200 are in Rock Springs, 62 in Hanna, 44 in Cumberland, 19 in Reliance, 14 in Superior, 6 in Winton and 9 are now living in China.

Over 650 miners and their wives enjoyed a banquet after a short parade of the association early in the day. Speeches were few and short. G. B. Pryde, general manager, was master of ceremonies. Eugene McAuliffe, president of the company, presented gold buttons to members who had attained 40 years of service. Ex-Senator C. D. Clark made an address in which he told reminiscences of Rock Springs.

Later in the day the Cumberland band, composed of miners and their children, and led by Umberto Bovero, gave an excellent concert in the Plaza. The event of the day, however, was the evening entertainment held at the local theatre. A pageant of progress, into which were woven important historical events of the West and of the Wyoming coal fields; was presented by the engineering and office staff, miners, children and others of the community. Mr. Make-It-Safe, the first-aid men, the rescue teams and the Rock-Dust Twins took part.

by the officials of the Canadian National Railways upon the possibility of materially increasing the average freight train load, either by improvements to the lines in gradients or otherwise, or by increase in traction power, with a view to reducing the cost of rail haul from Alberta to the Head of the Lakes, and also upon the costs of effecting such improvements.

## Nova Scotia Society Lauds Duncan Commission

The Mining Society of Nova Scotia held its thirty-fourth convention at Baddeck, June 22 and 23. A. S. McNeil, president of the society and general superintendent of the coal mines of the British Empire Steel Corporation, who presided, extolled the preceding president, C. M. Odell, who died suddenly soon after receiving a telegram announcing that he had been unanimously re-elected. Speaking in appreciation of the work of the coal commission that had investigated the industry in Nova Scotia, headed by Sir Andrew R. Duncan, Mr. McNeil said the Besco interests had been able to enter a two-year agreement with the miners.

President McNeil spoke glowingly of the work of G. S. Rice, of the U. S. Bureau of Mines, who had been loaned to the Nova Scotia Mines Department. The recommendations of Mr. Rice were fully concurred in by the coal mining department of Besco, particularly regarding bumps which have occurred occasionally in the Springhill coal mining area.

The convention recommended that federal aid be extended to the building of coke ovens, in order to provide a new outlet for provincial coal. It also was urged that the Canadian National Rys. be solicited to increase its supply of banked coal, on the ground that during the winter, when navigation is closed, the increased demand from the railroad system would avert shutdowns at the mines.

## Traffic News

### Want Springfield-Hannibal Cut Made Effective

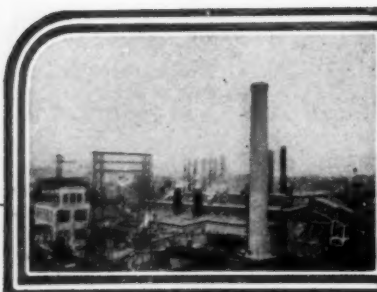
The Hannibal (Mo.) Shippers' Association has petitioned the Interstate Commerce Commission for reconsideration of facts of record in I & S Docket 2596, bituminous coal from Illinois to Iowa, Illinois and Missouri. A modification of the Commission's order is sought to allow the proposed rate of \$1.50 per net ton on bituminous coal from Springfield and Riverton, Ill., on the Wabash Ry. and from the Springfield district on the Chicago & Alton to Hannibal, Mo., to become effective. The rate was formerly \$1.60 and the C. & A. and Wabash filed tariffs reducing the rates to \$1.50, which were suspended until July 7 upon request of the Christopher (Ill.) Business Men's Association and the Eighth District Coal Operators' Association.

### Rates from Southwest Virginia To Southeast Filed

The Southern Ry. Co. has filed tariffs with the Interstate Commerce Commission publishing rates on coal from mines on its Appalachian Division in southwestern Virginia and surrounding territory to various points in the Southeastern section of the United States on a level with the rates now maintained from the Harlan field on the Louisville & Nashville Ry. These new rates are contained in Supplement No. 4 to Southern Ry. ICC 10003, and become effective July 22, 1926.

### Indian Creek Coal & Coke Co. Asks Rehearing

The Indian Creek Coal & Coke Co., Indian Head, Pa., has filed petition with the Interstate Commerce Commission for a rehearing, reargument or modification of its order in Docket 15742, Indian Creek Coal & Coke Co. vs. Atlantic City Ry. Co. The Commission's order dismissed the complaint with a finding that the rates on coal from points on the Indian Creek Valley Ry. to Eastern and New England destinations are not unduly prejudicial.



## News Items From Field and Trade



### ALABAMA

**Gas Fumes Kill Four.**—Four employees—two white men and two negroes—were suffocated on June 10 by gas fumes in abandoned working of the Majestic mine of the Imperial Coal & Coke Co., which they entered to reclaim pipe lines. These men were instructed to wait at a designated point for closed lamps before proceeding into the danger zone, according to officials of the company, but neglected to do so and were quickly overcome by the fumes.

**More Deepwater Rumors.**—Another report from Jasper, Walker County, is that Sam Hill, president of the Deepwater Coal & Iron Co., has authorized an expenditure of \$1,000,000 in development work on its coal holdings in that section, which are said to embrace 500,000 acres of valuable coal-bearing properties. It is further stated that new mines are to be opened and steps taken to increase production at several small operations which are now active. The plans are said to contemplate the building of byproduct ovens later on. The company, which was promoted by L. B. Musgrove, was organized several years ago with capital stock of \$20,000,000. Capitalists from Chicago, New York and other points are reported to be interested. The company to date has done very little development work, though it has been reported from time to time that extensive developments were in progress.

### COLORADO

**Lease Happy Canon Mine.**—A. Samples and Arthur Gregory, for many years employees of the Colorado Fuel & Iron Co., recently leased the Happy Canon coal mine, five miles west of Montrose, and will at once begin getting out capacity production. Lewis Williams is the new foreman of the mine.

**Few Fail in Tests.**—Only 30 of the 134 candidates who took the examination for coal mine officials, held in Denver last week by the state board of coal mine examiners, failed to pass. Of the candidates for certificates as mine foremen, 44 passed; 2 candidates for assistant mine foremen passed; 55 candidates for fireboss passed, and 3 results are being held in abeyance.

**Preparation Plant Nearly Ready.**—Installation of the new preparation plant at the Royal mine of the Royal Fuel Co., in the Aguilar district, is expected to be completed by July 15, according to Samuel Tescher, general superintendent of the company. The new equipment will include the latest type picking-table screens, reciprocating

feeders, loading booms, storage bins and belt conveyors. Harry Van Mater is president and C. F. Cusack is vice-president of the company, the general offices of which are in Denver.

### ILLINOIS

During May, last, 151 Illinois mines averaged 10.8 days' work and produced 3,745,011 tons of coal. Thirteen of these were stripping operations and the remainder were shaft and slope mines. The total men employed was 47,204; fatalities, 13; injured, 1,363. Output in the preceding month was 4,647,003 tons, and in May, 1925, 3,861,331 tons.

### KANSAS

**Operators Resume Production.**—The Oberjohn Coal Co. on June 8 began hoisting coal from Mayer mine No. 11, in the southeastern Kansas field, which it operates under lease. The mine, which had been closed several weeks, is located near Mineral. It employs forty men. A little more than a week later, in the same section of the field, the Mineral Coal Co. began work in the Crescent mine. Other operators have announced they will reopen in July.

Frank and Victor Simone, of Weir, drilling on a 7-acre tract of ground north of Pittsburg, found a seam of coal 3 ft. 8 in. thick at a depth of 25 ft. They will erect a tippie soon and expect to have the mine in operation or the autumn trade.

### KENTUCKY

**To Open New Coal Area.**—A new coal and timber area is to be opened soon in the King's Creek section near Roxana, in Letcher County—a section now being tapped by a three-mile branch line railroad connecting with the main line of the Louisville & Nashville. The Champion Coal Co., of which F. W. Whitlow, Des Moines, Iowa, is at the head, will make the coal development. The coal consists of two or three good workable seams, one the King's Creek cannel coal, which is about 6 ft. thick. It also extends through the adjacent section of Line Fork. The building of a modern new mining town will be started at once.

**Sell \$150,000 Mine for \$20,000.**—The Montgomery Creek Coal Co., representing an investment of about \$150,000, was sold under the hammer June 14 by Master Commissioner Roberts for \$20,000. This amount will about pay royalties, taxes and costs of sale. The purchasers were the Hardaway interests represented by Horace Hardaway, of

Bristol, Tenn. This mine is located at Vicco. Some months ago it went bankrupt and a receiver was appointed.

Claude L. Ryley, owner of extensive coal mining properties in Perry County, Illinois, has purchased the plant of the Storm King Coal Co., on the main line of the Louisville & Nashville R.R., three miles from Hazard. The deal was made between Mr. Ryley and Francis Hadley, of New York, president of the Storm King company. The sum involved was not made public. The mine is electrically equipped.

**Setback for Harlan Court Plan.**—Coal interests of Harlan County were disappointed on June 18, when the Kentucky Court of Appeals declared unconstitutional the act of the last Legislature creating Harlan as the thirty-eighth judicial district, giving it separate courts and control over operations in the county. The unfavorable ruling was based on the fact that the county hasn't a city of 20,000, as provided for in the constitution. As a result Harlan goes back into the twenty-sixth judicial district with Bell County; Knox back into the thirty-fourth, etc. While the city has but 13,000 people within the present limits, there are 23,000 within a mile of the court house and in the graded school district. The population of the county has increased from 31,000 in 1920 to 75,000.

**The Golden Ash Coal Co., Williamsburg,** has filed amended articles reducing its capital from \$50,000 to \$10,000.

Notice has been filed by the Kelly Coal Co., Paintsville, dissolving the corporation.

George W. Hubley, combustion engineer, Louisville, spoke on "Combustion," and a moving picture entitled "The Three Atoms," illustrating the chemistry of the combustion of fuel, was shown, at a meeting of the Railroad Smoke Abatement Committee at the Y.M.C.A., Louisville, on the afternoon of June 17. Invitations to the meeting were extended to the public, especially steam-plant firemen, and railroad engineers and firemen.

**Cave-in Kills Loader.**—A portion of the roof in the No. 7 mine of the West Kentucky Coal Co., near Clay, caved in June 16, on George Shoulders, 30 years of age, a loader. He was buried under tons of debris, and died a short time after being dug out.

**To Develop West Kentucky.**—The Western Kentucky Development Association was organized at Dawson Springs early in June. One of the purposes of the new organization is to exploit the mineral fields in western Kentucky and also develop industrial oppor-



tunities. Nearly twenty counties in western Kentucky were represented in the meeting. J. N. Day, of Dawson Springs, was elected president of the association and W. P. Scott, also of Dawson Springs, was elected secretary.

**Power Company Issues Bonds.**—A new issue of \$1,100,000 Kentucky Electric Power Co. first mortgage gold bonds, Series A, 6 per cent., is being offered by Hambleton & Co., the Baltimore Trust Co. and Biddle & Henry at 99 and interest, to yield about 6.05 per cent. The company supplies electric light and power to a group of mines comprising some of the largest producers in Kentucky. The bonds are due Jan. 1, 1951.

**Muncey Property on Sale.**—The properties of the Muncey Coal Mining Co. at Krypton were offered June 11 at public auction by the receivers, Alfred T. Adams and J. Y. Crawford. The Kentucky River Coal Corporation cancelled its lease; Effie Smith bought two small lots of the property; there was no bid for the lease of Ace Muncey; Luke Lee, plaintiff, bought the camp site. This property represented an investment of \$150,000 and at one time had a payroll of \$26,000 a month.

## OHIO

The Ohio Coal Bureau was organized recently for the purpose of furthering the use of Ohio-mined coal. Its headquarters are in the Chester-Twelfth Bldg., Cleveland. The president of this organization is H. L. Forstbauer, president, Lake City Coal Co.; vice-president, C. L. Terry, president Midvale Goshen Coal Co.; treasurer, H. R. Sullivan, secretary and general manager Central Coal Mining Co., and secretary, J. L. Good, formerly of the National Coal Co. Three directors also were elected, one each from the Cambridge, Hocking and eastern Ohio districts. It is understood that studies will be made along scientific lines at plants of large users to increase the efficiency of Ohio mined coal for steam purposes and reduce fuel costs.

The West Virginia Coal & Coke Co. general sales offices have been moved to larger quarters in the Atlas National Bank Building, Cincinnati. The general offices of the company will remain in Fairmount, W. Va., according to W. M. Wilshire, president.

**Miners Get Personal Appeal.**—Cooperation of the miners in opening the mines is asked in 1,500 letters sent to employees by W. R. Woodford, president of the Rail & River Coal Co., which operates in the Bellaire field. The company's mines have been idle fourteen months. Mr. Woodford told the miners that business which really belongs to the Bellaire field is going to the non-union fields of West Virginia and Kentucky.

**White Star Co. Creditors Press.**—Involuntary bankruptcy proceedings were filed in U. S. District Court last week against the White Star Coal Sales Co., 531 Dixie Terminal Building, Cincinnati, of which L. H. Stone is manager. The petitioning creditors are the Tildesley Coal Co., the Logan Pocahontas Fuel Co. and the Burlingham Coal Co., Cincinnati, who set up unsecured claims



**How Is This for a Scene in the Semi-Arid Region of the West?**

This shows Chestnut St., Dawson, N. M., during midsummer. Such a boulevard is rarely found in big cities. The mines around Dawson are owned by the Phelps Dodge Corporation. The manager's residence can be seen in the foreground. The west has now many fine paved roads making motoring delightful.

for \$704.50, \$196.42 and \$3,000, respectively, each of the claims being based upon coal sold and delivered to the respondent company. The creditors aver that the White Star company is insolvent and that it has admitted its inability to pay its debts and its willingness to be adjudged to be bankrupt. Stone was at one time the general manager of Jewett, Bigelow & Brooks, now in bankruptcy, and later general manager for the Southern Coal & Coke Co.

**Three Firms Face Bankruptcy Charges.**—The Sunday Creek Coal Co., of Columbus, is the plaintiff in three suits filed in the U. S. Court, Columbus, asking that three coal mining companies in the Hocking Valley be declared bankrupt. The petitions are against the North Hill Coal Co., the Carr Run Coal Co., and the Big Bailey Mining Co. The Sunday Creek Coal Co., claims that judgments against the various companies secured recently and amounting to about \$24,000 have not been paid. The defendant corporations operated mines owned by the Sunday Creek Coal Co. on lease agreements and there has been considerable litigation for the past three years. The trouble started when the defendant companies tried to abrogate a sales contract with the owner of the mines and sold their product without paying the usual selling commissions.

The sale of the Progress Coal Co.'s mine at Bannock to the Youghiogheny & Ohio Coal Co., of Cleveland, for \$61,163 has been approved by the Belmont common pleas court.

The Midland Coal Co., of Cincinnati, has opened a branch office in Cleveland, in the Rockefeller Building, under the direction of P. T. Hanigan, long established in the trade there. He will have charge of distribution for the company in northern Ohio, to the lakes and in Canada.

The headquarters of the L. D. Poston Coal Co., formerly located at Athens, was moved to the Huntington Bank Bldg., Columbus, early in June. L. D. Poston is in charge of the office and Layton Aumiller is his assistant. The

mines have not been in operation for a short time, but will resume when market conditions warrant.

## PENNSYLVANIA

**Coal in Stony Mountain.**—Coal mining has been started south of Carsonville in Jefferson township. Coal in small quantities is now being taken from Stony Mountain for use in the mining operations to make steam for hoisting machinery. A recent examination by engineers indicated at least nine to eleven beds of coal from 3 in. to 13 ft. thick. The coal is said to contain 15 per cent volatile matter and has all the characteristics of bituminous coal. As the coal beds extend eastward they become harder. A roadway is now being built so that trucks can reach the scene of the mining operations and transport the coal to nearby towns and railroads.

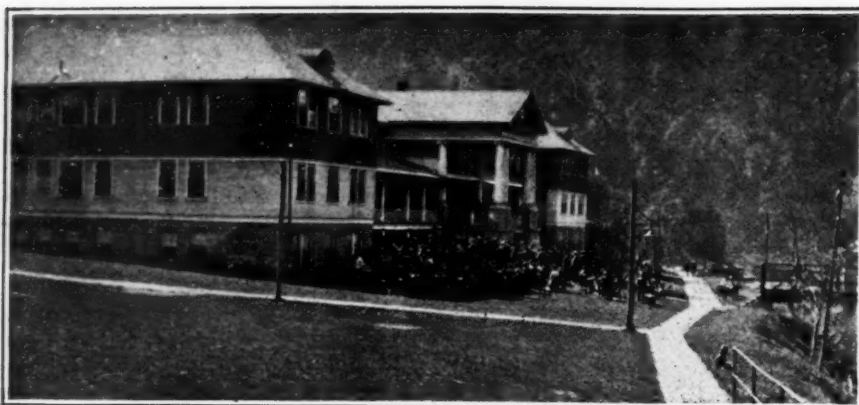
The steel coal tippie and trestle approach being erected for the Snowden Coke Co. at its plant near Brownsville, Fayette County, will be completed and put in operation about July 1.

A voluntary petition in bankruptcy has been filed by the Penn-Lackawanna Coal Co., with properties at Carbondale. The coal company has not been operating its properties for some time.

**To Replace Obsolete Tippie**—The Fredericktown Coal & Coke Co., Fredericktown, has perfected plans for the erection of a new steel tippie on the Monongahela River, opposite Martin Station, to replace its present structure, which has become obsolete.

**New Breaker for Pardees.**—Construction of a new breaker, designed to handle the output of three mines, is under consideration by Pardee Bros. & Co. at the Lattimer mines, Luzerne County. The machinery will be electrically operated, the total cost, including equipment, to be in excess of \$200,000.

**Strikers Set Sentiments to Music.**—At the Buffalo & Susquehanna mines at Sagamore, where operations are in progress in spite of a miners' strike, the court has forbidden regular picket-



**Club House at Gary, W. Va., the Outstanding Feature of the Village**

This building was erected as a means of entertaining transient visitors and unmarried persons who live in the town. It was erected by the United States Coal & Coke Co. Most of the school teachers stay in this hotel, the schools of the town being as good as any in the state. The picture was taken when Gary and the coal company entertained the American Institute of Mining & Metallurgical Engineers on one of their annual jaunts for pleasure and instruction.

ing of the mines, so the strikers have selected band players and singers and formed bodies who play or sing the sentiment that they are not allowed to express more directly. Parades and theater parties are the occasions for getting off a lot of local compositions like "Stranger, why did you come here?" also old songs and church hymns that may seem appropriate. Elder Williams, who leads the singing, is a miner and the local Presbyterian church has become a community church and joins in the strikers' movements.

The Creek Fork Coal Co., Inc., Hunter Station, near Trevorton, is preparing to begin operations at its local plant, where coal bricks will be manufactured from anthracite screenings. The company will dredge the creek to reclaim coal. B. W. Fordham, Trevorton, is general manager.

**Rock Fall Kills Two.**—Two miners were killed and a third escaped with slight injuries June 25 at Plymouth when top rock fell upon them while working in the Gaylord colliery of the Kingston Coal Co.

### TENNESSEE

The storeroom of the College Coal & Mining Co., Pikeville, recently was damaged by fire to the extent of about \$20,000.

### WEST VIRGINIA

**Paisleys Open No. 1 Mine.**—No. 1 mine of the Elm Grove Mining Co., at Elm Grove, in the Panhandle district, opened June 19 on a non-union basis. The mine had been idle for about two months. About 100 men reported for work, according to Superintendent Joseph Arkwright. The company, which is controlled by the Paisley interests, plans to resume operations at the other two mines at Elm Grove as soon as possible. When all four mines of the company are operating about eighteen hundred men are employed.

**Coke Ovens Resume.**—After lying idle for the last six months, coke ovens of the Semet-Solvay Company at Benwood will be placed in operation on June 28, in order to take care of a part

of the production formerly made by the Gary (Ind.) plant, which was partly destroyed by an explosion a few days ago.

George L. Kerr, formerly assistant cashier for the West Virginia Division of the Consolidation Coal Co., entered a plea of guilty last week in the Marion County Criminal Court to a charge of embezzling \$42,232.60 of the company's funds during a period covering many months. He was sentenced to an indeterminate term of three to five years in the penitentiary.

The Fall River Pocahontas Collieries Co., a New York corporation, has decreased its capital stock from \$90,000 to \$30,000, according to a certificate filed in the office of the secretary of state.

The Colcord Coal Co. has completed the installation of a rotary dump at its Montcoal No. 1 mine, at Montcoal. Improvements completed which include a storage bin and the purchase of about 50 mine cars, represent an expenditure of between \$15,000 and \$20,000.

The Redstone Coal & Coke Co., of Weirton, plans to construct a coal loading dock and chute at its mine on the upper Monongahela River.

The Fredericktown Coal & Coke Co. plans to replace its existing tippie with a more modern structure at its mine on the Monongahela River opposite Martin Station, Pa.

Glen Rogers mine of the Raleigh-Wyoming Mining Co., at Glen Rogers, Wyoming County, which produced 38,187 tons of coal in May, is now the largest producing mine in the Winding Gulf field. The Raleigh-Wyoming Mining Co. is the successor to the Raleigh-Wyoming Coal Co.

The Raleigh-Wyoming Mining Co. is installing a 13-ton locomotive at its Edwight mine, at Edwight, Raleigh County.

**New Firm Leases Two Mines.**—Announcement has been made by the Stramer Fuel Co., Charleston, that it has leased the mines of the Richards Coal Co., which include the Standard Eagle mine, at Seacoal, and the Halcon mine, at Coalbloom, both in Boone

County. The officers of the Stramer Fuel Co., which recently was organized, are George E. Merryman, president; F. A. Strabley, vice-president, and Harry N. Greenlee, secretary and treasurer.

The MacAlpin Coal Co. is rebuilding its screening plant at MacAlpin mine, along the Winding Gulf branch of the Virginian Ry. in Raleigh County. The steel will be on the ground within two weeks and it is planned to complete the work by Sept. 1.

A dissolution notice was filed recently in the office of the Secretary of State in Charleston by the Braxton Fuel Co., of Clarksburg. The State Coal Co., of Clarksburg, also filed a certificate of dissolution.

The Crane Fuel Co., a West Virginia corporation, with headquarters at 1739 Eastern Avenue, Cincinnati, Ohio, has surrendered its charter to the office of the Secretary of State. The incorporators were John R. Evans, Rollo D. Campbell and Okey P. Keadle, all of Huntington, and Dietrich John Kahl-saat and W. H. Lockwood, both of Cincinnati.

Gales of cyclonic proportions blew up the Guyan Valley in the Logan coal fields on June 12, and the tippie of the Shamrock Coal Co., which spans the Island Creek, was wrecked. Several frame houses and roofs of others also were blown down in mining camps.

**Add Personal**

Gilbert Smith, manager of the Fire Creek Coal Co., has awarded a contract for a new steel tippie to replace the wooden structure recently destroyed by fire. The new tippie will be in readiness for operation within 30 days.

### CANADA

**Protective Plans Plentiful.**—G. S. Harrington, Minister of Public Works and Mines in Nova Scotia, testifying in the House of Commons, at Ottawa, before the special committee investigating the Dominion's anthracite supply, made the following recommendations: (1) Governmental assistance for the erection of coking plants within Canada at points serving large centers of population; (2) grant of a subvention on Maritime coal water-borne to Montreal when carried by rail west of Montreal; (3) protection to Maritime coal from unfair competition by American producers; (4) cancellation of the bonding privilege for American coal for bunkers supplied in Canada.

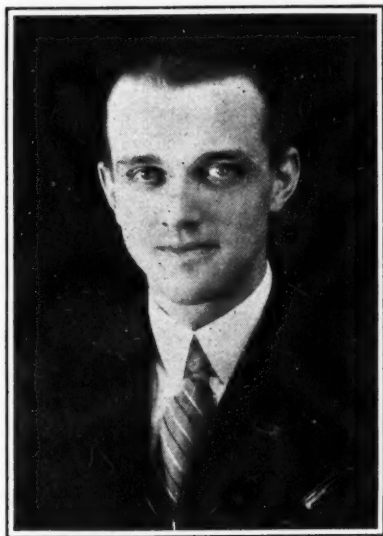
**Voids Fuel-Oil Tax.**—The British Columbia Court of Appeal has confirmed the decision of Justice Morrison in the Supreme Court, declaring the fuel-oil tax imposed in the 1923 session of the Provincial Legislature ultra vires beyond power of that Legislature. The case was brought to the Court by the Canadian Pacific Railway Co. and the Union Steamship Co., which refused to pay the tax of 0.5c. per gallon on all fuel oil purchased in British Columbia. Though nominally imposed as a revenue tax, it was generally believed to have been imposed to protect the coal-mining industry of British Columbia in general and that of Vancouver Island in particular.



## Among the Coal Men

Frank Transou has severed his connection with the Buckeye Coal Co., a subsidiary of the Youngstown Sheet & Tube Co., to become superintendent for a contracting firm in Pittsburgh, engaged in building the Pittsburgh tubes. Mr. Transou, who has had extensive experience as a shaft and tunnel superintendent, was in charge of sinking an auxiliary airshaft to increase ventilation of the mine at Nemacolin, Pa.

Eugene C. Hultman, chairman of the Massachusetts Commission on the Necessaries of Life, has been appointed Fire Commissioner of Boston by Mayor Nichols. Mr. Hultman also was State Fuel Administrator, in which capacity he rendered yeoman service to New England consumers.



Frank J. G. Duck

Mr. Duck, who since September, 1924, has been instructor of metallurgy at Lehigh University, is making a study of coal preparation on behalf of *Coal Age*. Mr. Duck was born in Brooklyn, N. Y., Nov. 17, 1898. He was graduated with the degree of B.S. from St. John's College, Washington, D. C., in 1916, receiving the degree of Ch.E. from Lehigh University in 1919. After graduation, he was employed at Edgewood Arsenal, Edgewood, Md., as foreman in charge of experimental production of various poison gases and their intermediates; from August, 1920, to March, 1921, he was foreman in chlorine-derivatives and electrochemical departments of the Hooker Electrochemical Co., Niagara Falls, N. Y. From March, 1921, to September, 1922, he was assistant principal, Schools of Mining and Metallurgy, International Correspondence Schools, Scranton, Pa., during which time he edited or helped to edit many of the instruction papers on thickeners, filters and clarifiers. From September, 1922, to June, 1923, he was assistant instructor in chemistry, Yale University, carrying on work leading to his Doctor's degree.

He then returned to the International Correspondence Schools as acting department head of mining and metallurgy, where he remained until September, 1924, his duties being essentially the same as during his previous employment; in September, 1924, he went to Lehigh University as instructor of metallurgy, having particular charge of metallography and metallurgical problems. During the summer of 1925 he (together with Professor Eckfeldt) technically edited and revised the new edition of "Examination Questions for Certificates of Competency in Mining" by the International Textbook Co., which probably will be published in the near future. He helped his father (the late George F. Duck, one-time Western editor of *Mines and Minerals*, which later became the *Colliery Engineer* and was then consolidated with *Coal Age*) edit the Coal Miners Pocketbook, which was shortly thereafter sold to the McGraw-Hill Book Co.

Francis D. Brown, manager of the Welfare Medical Association, Salt Lake City, an organization representing the coal mining companies operating in the Spring Canyon district, was shot and perhaps fatally injured by a miner while sitting at his desk last week. The assailant turned the weapon upon himself, inflicting equally serious injuries. Mr. Brown, who is 48 years of age, was formerly in the employ of the Spring Canyon Coal Co. He said at the hospital that he had no idea as to the reason for the attack.

H. F. Fernstrom, manager of the Western Fuel Co., Salt Lake City, has been elected president of the Lions' Club of that city.

Kirby Thomas, of New York City, has been engaged in the valuation of anthracite properties in the Shamokin (Pa.) area for banking interests.

F. S. Knox and T. W. Gray, of the Pittsburgh Coal Co., were recently in Rock Springs, Wyo., studying improved methods of handling coal underground.

E. F. Bardin, former president of the MacBard Coal Co., of Cincinnati, Ohio, and president of the Cincinnati Coal Exchange, has returned to Cincinnati after a winter spent in Lakeland, Fla. Mr. Bardin may again be found in the coal business this fall.

Col. W. H. Gillie, of Charleston, W. Va., addressed the members of the mining extension class of the University of West Virginia, Morgantown, on June 15. Thirty-two men are enrolled in the course this summer.

George Whyel, of Uniontown, Pa., has returned home from Coral Gables, Fla., where he spent the winter and spring with his family. He is president of the Consolidated Coke Co. and the Whyel Coal & Coke Co.

J. B. Altemus and other officials of the Mineral Development Co., Philadelphia, were recently in the Kentucky

fields, inspecting their coal properties. The company controls a large acreage of cannel coal in southeastern Kentucky.

John V. W. Reynders, chairman of the committee named last year to investigate and report on the advisability of reorganizing the U. S. Bureau of Mines, expects to arrive in New York on July 2. He has been in Russia for several months in connection with the American-Caucasian manganese ore concession.

George A. Lutz, of Boonville, Ind., formerly organizer for the United Mine Workers, who traveled for the organization in several states, now operates a retail grocery store in Boonville.

Charles E. Hawker, who is affiliated with the Continental Coal Co., is in Philadelphia, where he will remain for several days on business, visiting New York during his stay.

## Obituary



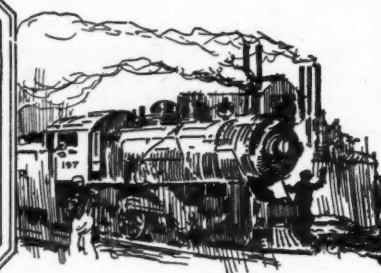
Thomas F. Farrell

Expressions of esteem for the late Thomas F. Farrell have been numerous since his sudden death on June 17. The following, from R. H. Gross, president of the New River Co., to Harry L. Gandy, executive secretary of the National Coal Association, is typical: "It is hard to realize that we shall never again have the opportunity of meeting and consulting with our dear friend, Tom Farrell. We have not only lost a good friend but a very valuable member of the smokeless and the entire bituminous industry."

John Wesley Moore, 58 years old, Charleston (W. Va.) coal operator, died in Johns Hopkins Hospital, Baltimore, Md., on June 24, after being in failing health for three or four years. He had not been at his office since Dec. 26, 1925. For several years he was connected with the Chesapeake Mining Co. at Handley, W. Va., after which he became superintendent of the Coalburg Colliery Co. at Ronda. Afterward he became connected with the Kanawha Gas Coal Co. at Smithers, and later was an officer of the Hughes Creek Coal Co. at Hugheston. In 1915 he organized the Ivy Branch Coal Co.



## Production And the Market



### Bituminous Coal Market, in Sensitive State, Reacts to Shifting Conditions

Export demand for West Virginia high-volatile coal continues to color the bituminous market situation in the Appalachian Region. The influence is felt not only in the particular producing districts in which orders for shipment to European countries have been placed but also in neighboring coal fields. In some of the latter a more optimistic outlook is now discernible.

The effect of this rising tide of foreign buying would be still more marked were it not for the fact that movement last week was hit by an embargo on the Chesapeake & Ohio Ry. placed to clear up the congestion created by the sudden expansion in demand at the Virginia loading piers. Pier prices on pools 5, 6 and 7, which had jumped to \$4.50@ \$4.60 the preceding week, receded to \$4.10@ \$4.25. Quotations on high-volatiles at other North Atlantic ports were unaffected.

In the Middle West, outside of the zone of influence of export orders, price reactions last week took the form of advances on the more favored domestic grades in Illinois and Indiana and a break in the quotations on screenings in the Chicago market. The advances were anticipatory of a heavier demand which has yet to develop. The slump in fine coal was attributed to a stoppage of stocking orders by a few large consumers and a shift in buying to co-operative mines in southern Indiana.

#### Price Situation Adjusts Itself

These reactions indicate the sensitiveness of the market to any real change in conditions. In a final summation, however, the gains in one direction are generally offset by losses in another. This is shown in the relatively narrow fluctuation in weighted average prices for the country as a whole. Coal Age Index of spot bituminous prices on June 28 stood at 157 and the

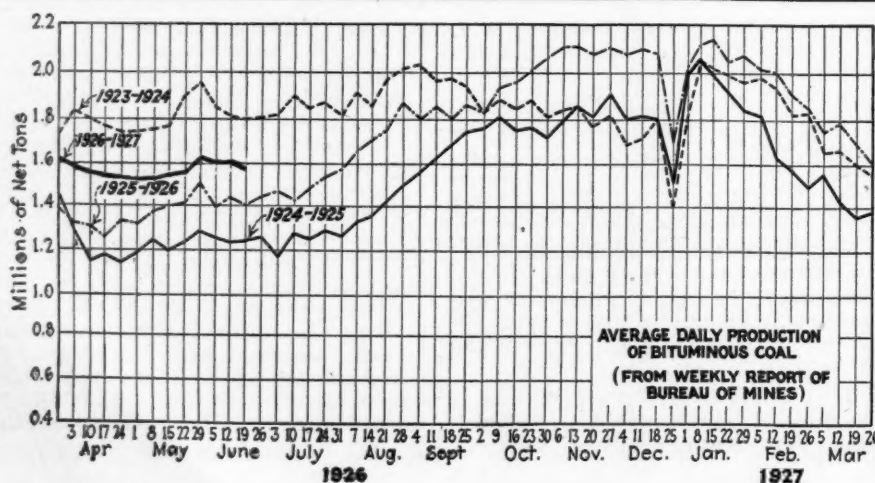
corresponding price was \$1.90. Since the beginning of the current coal year there has been a difference of only five points and 6c. between maximum and minimum.

The forecast of a slowly contracting bituminous output, made last week, is borne out by the preliminary estimates of production for the third week in June. The total for that week was estimated by the U. S. Bureau of Mines as at 9,504,000 tons, as compared with 9,624,000 tons the week ended June 12. Outside of a few favored regions, notably Kentucky and West Virginia, the general tendency in production rates is downward.

The lake trade is well maintained. During the week ended June 27 bituminous dumpings totaled 1,075,105 tons of cargo and 49,603 tons of vessel fuel. This brings the total for the season to date to 9,374,255 tons, as compared with 9,143,970 tons for the corresponding period a year ago. Anthracite dumpings for the preceding week totaled 133,865 net tons.

Production of hard coal during the week ended June 19 dropped to 2,032,000 net tons. This was 51,000 tons or 2.4 per cent less than in the preceding week. Nevertheless the rate of output since the middle of May has been well ahead of 1925. Cumulative production from April 1, 1926, is approximately 2,576,500 tons greater than during the corresponding period last year. The high rates which have made this gain possible, however, are being maintained with increasing difficulty, as the market is disinclined to absorb much more tonnage at the prevailing prices.

A temporary revival of interest in contracting gave a touch of life to the Connellsville coke trade last week. The volume of business signed up, however, was disappointing. Furnace coke was closed at around \$3. Some foundry business was entered at \$4.50@ \$4.75, but many buyers preferred to stick to the lower spot market.



#### Estimates of Production

(Net Tons)

##### BITUMINOUS

	1925	1926
June 5.....	8,375,000	8,660,000
June 12 (a).....	8,622,000	9,624,000
June 19 (b).....	8,402,000	9,504,000
Daily average.....	1,400,000	1,584,000
Cal. yr. to date..... (c)	220,994,000	252,532,000
Daily av. to date.....	1,533,000	1,750,000

##### ANTHRACITE

June 5.....	1,634,000	1,678,000
June 12.....	1,825,000	2,083,000
June 19.....	1,745,000	2,032,000
Cal. yr. to date..... (c)	41,451,000	33,095,000

##### BEEHIVE COKE

June 12 (a).....	136,000	196,000
June 19 (b).....	130,000	184,000
Cal. yr. to date..... (c)	5,060,000	6,353,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.



## Screenings Break in Midwest Markets

In the face of restricted production, Illinois and Indiana screenings broke badly last week and carried quotations on western Kentucky fine coal for Chicago into the decline. Discontinuance of stocking by one or two large consumers and a shift in buying to co-operatives in southern Indiana are advanced in explanation of the slump. Indiana operators are waging a sharp battle for steam tonnage in the Mississippi River valley against both Illinois and Kentucky.

While prices on screenings were slipping, Franklin County producers announced an increase of 15c. per ton, effective June 23, on prepared coal. Central Illinois lump moved up in sympathy. Operators concede that existing demand does not justify the increase, but believe it better policy to advance prices moderately as the season goes on than to put on a heavy increase when domestic buying reaches its stride.

Reports from the mining fields show a small movement of the larger sizes out of the Illinois and Indiana districts. "No bills" are still the common lot. In some cases shaft, as well as strip, mines are crushing coal to take care of steam contract requirements. Southern Illinois strip pits have the edge on running time. Railroad tonnage is the backbone of the business in the Mt. Olive district, but the volume is disappointing in the Duquoin, Jackson and Standard fields.

## Demand for Eastern Coals Improves

Demand for Eastern domestic coals in the Chicago market is improving. Orders are scattered, but the aggregate tonnage is considerable for this season of the year. The smokeless market is holding firm at \$1.75@\$.2 for mine-run, but prepared coal is weak. Anthracite is moving forward with a little better demand and the market for domestic coke is slowly broadening. The St. Louis local market is dull.

The outlook in Kentucky is brighter. The western part of the state is operating at approximately 50 per cent of capacity. Output from the eastern section is gradually increasing as lake movement and better all-rail shipments absorb more coal. A number of mines have been reopened and production has been speeded up at certain other operations. Aside from the lake trade, the bulk of the business at the present time is with industrial consumers and the utilities. Retail deliveries in Louisville are light, but mine prices are fairly well maintained.

Although it is difficult to obtain premium prices on fancy grade of prepared coal, the general level of quotations is steady. Western Kentucky 6-in. block holds firm at \$1.75@\$.185; lump and egg, \$1.40@\$.165; nut, \$1.25@\$.150; mine-run, \$1.10@\$.140; screenings, \$1@\$.115. Eastern Kentucky 4-in. block brings \$2@\$.235; lump, egg and nut, \$1.75@\$.2; mine-run, \$1.35@\$.165; slack, \$1@\$.115.

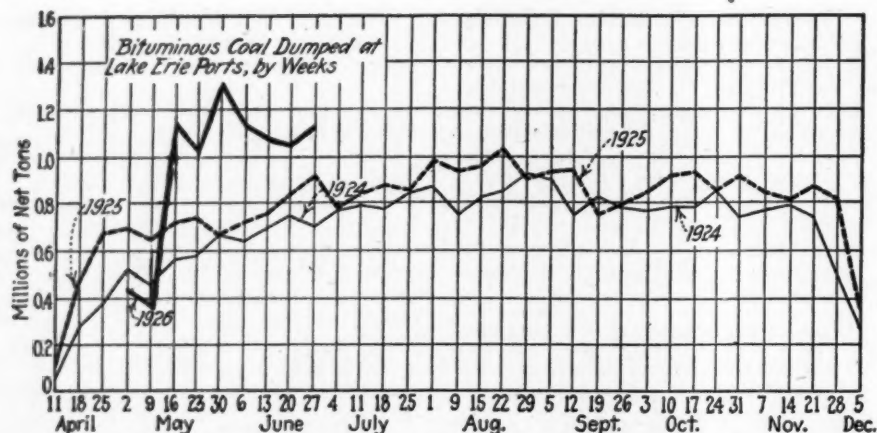
## Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern				Midwest				South and Southwest			
Market Quoted	June 29 1925	June 14 1926	June 21 1926	Market Quoted	June 29 1925	June 14 1926	June 21 1926	Market Quoted	June 29 1925	June 14 1926	June 21 1926
Smokeless lump.....	Columbus....	\$2.85	\$3.10	\$3.10	Franklin, Ill. lump.....	Chicago.....	\$2.60	Big Seam lump.....	Birmingham..	2.00	2.30
Smokeless mine run.....	Columbus....	1.85	2.05	2.10	Franklin, Ill. mine run.....	Chicago.....	2.35	Big Seam mine run.....	Birmingham..	1.75	1.85
Smokeless screenings.....	Columbus....	1.30	1.25	1.25	Franklin, Ill. screenings.....	Chicago.....	2.00	Big Seam (washed).....	Birmingham..	1.85	2.00
Smokeless lump.....	Chicago.....	3.10	3.00	3.00	Central, Ill. lump.....	Chicago.....	2.35	S. E. Ky. block.....	Chicago.....	2.45	2.40
Smokeless mine run.....	Chicago.....	1.85	1.90	1.90	Central, Ill. mine run.....	Chicago.....	2.10	S. E. Ky. mine run.....	Chicago.....	1.70	1.65
Smokeless lump.....	Cincinnati..	2.85	3.00	3.00	Central, Ill. screenings.....	Chicago.....	1.75	S. E. Ky. block.....	Louisville....	2.10	2.15
Smokeless mine run.....	Cincinnati..	1.85	2.00	2.00	Ind. 4th Vein lump.....	Chicago.....	2.60	S. E. Ky. mine run.....	Louisville....	1.55	1.45
Smokeless screenings.....	Cincinnati..	1.25	1.30	1.30	Ind. 4th Vein mine run.....	Chicago.....	2.35	S. E. Ky. screenings.....	Louisville....	1.10	1.15
*Smokeless mine run.....	Boston.....	4.25	4.30	4.40	Ind. 5th Vein lump.....	Chicago.....	1.80	S. E. Ky. block.....	Cincinnati..	1.50	1.55
Clearfield mine run.....	Boston.....	1.80	1.75	1.80	Ind. 5th Vein mine run.....	Chicago.....	2.25	S. E. Ky. screenings.....	Cincinnati..	1.10	1.10
Cambria mine run.....	Boston.....	2.10	2.00	2.10	Ind. 5th Vein screenings.....	Chicago.....	1.95	Kansas lump.....	Kansas City..	4.00	4.00
Somerset mine run.....	Boston.....	1.90	1.85	1.90	Mt. Olive lump.....	Chicago.....	1.50	Kansas mine run.....	Kansas City..	3.00	3.00
Pool 1 (Navy Standard).....	New York....	2.55	2.60	2.60	Mt. Olive mine run.....	Chicago.....	2.50	Kansas screenings.....	Kansas City..	2.50	2.40
Pool 1 (Navy Standard).....	Philadelphia..	2.60	2.65	2.65	Mt. Olive screenings.....	Chicago.....	2.25				
Pool 1 (Navy Standard).....	Baltimore....	1.85	2.00	2.10	Standard lump.....	Chicago.....	1.80				
Pool 9 (Super. Low Vol.).....	New York....	2.00	2.10	2.10	Standard mine run.....	Chicago.....	1.70				
Pool 9 (Super. Low Vol.).....	Philadelphia..	2.00	2.10	2.10	Standard screenings.....	Chicago.....	1.35				
Pool 9 (Super. Low Vol.).....	Baltimore....	1.75	1.80	1.85	West Ky. block.....	Chicago.....	1.10				
Pool 10 (H.Gr.Low Vol.).....	New York....	1.85	1.85	1.85	West Ky. mine run.....	Chicago.....	1.05				
Pool 10 (H.Gr.Low Vol.).....	Philadelphia..	1.70	1.85	1.85	West Ky. screenings.....	Chicago.....	1.05				
Pool 10 (H.Gr.Low Vol.).....	Baltimore....	1.60	1.65	1.75	West Ky. block.....	Chicago.....	2.00				
Pool 11 (Low Vol.).....	New York....	1.55	1.70	1.70	West Ky. mine run.....	Chicago.....	1.35				
Pool 11 (Low Vol.).....	Philadelphia..	1.55	1.55	1.55							
Pool 11 (Low Vol.).....	Baltimore....	1.40	1.60	1.60							

## Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

Market Quoted	Freight Rates	June 29, 1925		June 21, 1926		June 28, 1926†	
		Independent	Company	Independent	Company	Independent	Company
Broken.....	New York....	\$2.34	\$8.10@ \$8.70	\$9.25	\$8.25@ \$9.25	\$8.25	\$8.25@ \$9.25
Broken.....	Philadelphia..	2.39	8.60	8.50@ 8.75	8.50@ 9.15	8.50	8.50@ 9.15
Egg.....	New York....	2.34	\$8.50@ \$8.75	8.50@ 8.75	8.75@ 9.25	8.50	8.75@ 9.25
Egg.....	Philadelphia..	2.39	8.70@ 9.30	9.00@ 9.85	9.00@ 9.15	9.00	9.00@ 9.15
Egg.....	Chicago.....	5.06	7.86@ 8.50	8.48	8.13	8.48	8.13
Stove.....	New York....	2.34	8.75@ 9.25	9.00@ 9.50	9.25@ 9.50	9.00	9.25@ 9.50
Stove.....	Philadelphia..	2.39	9.30@ 9.65	9.15@ 10.30	9.35@ 9.50	9.15	9.35@ 9.50
Stove.....	Chicago.....	5.06	8.22@ 8.70	8.84	8.33@ 8.58	8.84	8.33@ 8.58
Chestnut.....	New York....	2.34	8.25@ 8.50	8.45@ 8.70	8.75@ 9.15	8.00	8.75@ 9.15
Chestnut.....	Philadelphia..	2.39	8.70@ 9.55	8.60@ 8.70	9.00@ 9.15	8.75	9.00@ 9.15
Chestnut.....	Chicago.....	5.06	8.14@ 8.35	7.69@ 8.00	8.38@ 8.53	8.71	8.38@ 8.53
Pea.....	New York....	2.22	4.75@ 5.50	5.00@ 5.70	6.00@ 6.25	6.00	6.00@ 6.25
Pea.....	Philadelphia..	2.14	5.50@ 5.75	5.00@ 5.40	6.25@ 6.75	6.25	6.00@ 6.35
Pea.....	Chicago.....	4.79	4.91@ 5.36	4.69@ 5.00	6.03	5.65	5.65@ 5.80
Buckwheat No. 1.....	New York....	2.22	2.00@ 2.40	2.50	1.75@ 2.25	1.50	3.00@ 3.50
Buckwheat No. 1.....	Philadelphia..	2.14	2.15@ 2.75	2.50	2.15@ 2.50	2.15	2.25@ 2.75
Rice.....	New York....	2.22	1.75@ 2.00	2.00	1.40@ 1.85	1.25	2.00@ 2.25
Rice.....	Philadelphia..	2.14	1.85@ 2.00	2.00	1.65@ 2.00	1.65	1.75@ 2.25
Barley.....	New York....	2.22	1.35@ 1.50	1.50	1.00@ 1.40	1.00	1.50@ 1.75
Barley.....	Philadelphia..	2.14	1.40@ 1.50	1.50	1.50@ 1.75	1.50	1.50@ 1.75
Birdseye.....	New York....	2.22		1.60	2.00	1.80	2.00

\* Net tons, f.o.b. mines. † Advances over previous week shown in heavy type; declines in italics.



Shipments of coal off the docks at the Head of the Lakes are running close to the summer average. A substantial volume of steam and gas business has been booked, but individual orders for the most part are on a hand-to-mouth basis. Prices now appear stabilized at the reductions made some weeks ago. Heavy rains over the Northwest have robbed the docks of orders from hydro-electric plants.

#### Northwest Indifferent to Anthracite

Anthracite buying by consumers in the Northwest has been backward since the beginning of June. Householders see no reason why they should store coal in advance when the distributors offer no inducements in the way of price concessions. An increasing use of others coals for house heating is forecast. Receipts of bituminous from the lower ports are piling up. Stocks as of June 15 were estimated at 2,900,000 tons, with 140,000 tons of anthracite in storage.

The coal trade at the Twin Cities is without distinguishing feature. Anthracite stocking orders have been curtailed. Prices on industrial coals have steadied. At Milwaukee demand has become spotty. Unlike consumers farther north, Milwaukee householders appear anxious to fill up their bins and this anxiety is translated into occasional spurts in demand for anthracite.

In the Southwest the general market conditions are unchanged. Threshing demand has helped Kansas production and there is a heavy movement of Arkansas semi-anthracite for storage. Utah domestic business, thanks to the price slashing of several weeks back, is still slightly above the seasonal average, but a tendency to slow down again is becoming noticeable. Slack is plentiful as the result of the increased output of prepared coal. The fact that all screened sizes have been selling at one price has swelled the demand for large lump and left operators with "no-bill" nut and stove.

#### Eastern Influences Control Cincinnati

Seaboard influences are the controlling factors in the Cincinnati market. Export demand has taken up much of the slack. Coming on top of the growing lake movement, it has put many shippers several weeks behind on their orders. Western buyers, however, appear unmoved by the business developing in the lake and tidewater markets. Local retail business, too, is backward.

Prices appear to have softened despite the wider markets offered. During

the past week some low-volatile shippers sold lump and egg under the \$3 mark, but developed little business as a result of price concessions. Mine-run is fairly firm at \$2. Slack is easy at \$1.25@1.35. There is talk of \$3 on lump and egg for July, \$2.50 on stove, \$2.25 on nut and \$1.50 on slack. High-volatile quotations on lump and block are draggy.

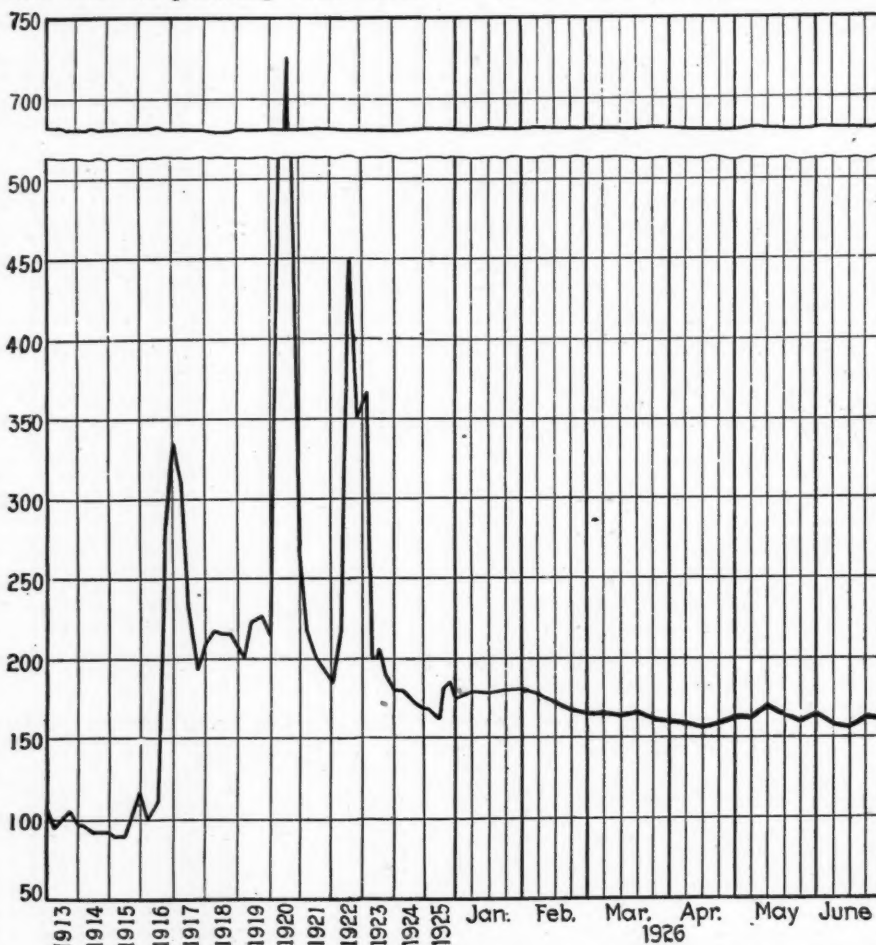
Movement of coal through the Cincinnati gateways is increasing. During the past week the interchange of loaded cars totaled 14,199, an increase of 324 cars over the preceding week. Louis-

ville & Nashville interchange increased 383 cars, but the C. & O. reported a decrease of 71 cars and the N. & W., 18. The total number interchanged included 4,258 cars consigned to the lakes. There was a decrease of 809 in the number of empties en route to the mines.

#### Better Domestic Demand at Columbus

Domestic demand again was the outstanding feature in the central Ohio market the past week. Most of the storage buying by the retailers favors the West Virginia and Kentucky mines, but there is enough Ohio tonnage included to make life less dreary to the Buckeye State operators. Columbus retail prices are steady. Country dealers are taking more interest in stocking. The industrial side of the market is dull. Pomeroy Bend is the only southern Ohio district participating to any marked degree in the lake trade.

Slack took another tumble in the Cleveland market last week, but No. 8 lump and mine-run held at the reduced basis which became effective the preceding week. Increased production of coal in other parts of the Appalachian Region was responsible for the further shading of slack prices on the Ohio output. The No. 8 field during the week ended June 19 produced 201,000 net

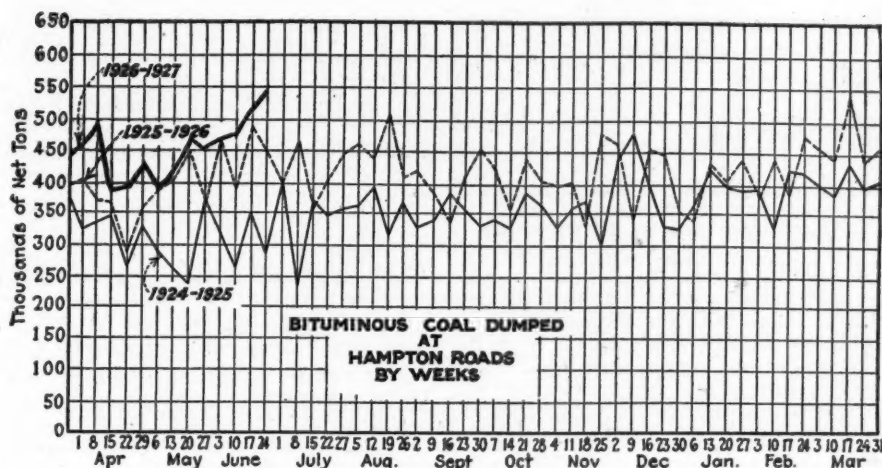


Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	June 28	June 21	June 14	June 7	June 29	June 30
Index .....	157	157	156	157	160	166
Weighted average price.....	\$1.90	\$1.90	\$1.89	\$1.90	\$1.94	\$2.01

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.





tons, or approximately 28.7 per cent of capacity, as compared with 203,000 tons the week preceding and 223,000 tons a year ago. Southern Ohio is operating on a 15 per cent basis.

There is less pessimism in the Pittsburgh district. Neither prices nor volume of trade has gained, but operators are hopeful that the development of export demand in competitive fields will react favorably upon the Pittsburgh area. Some storage buying also is expected. The district is further encouraged by the high rate of general industrial activity.

#### Central Pennsylvania Marks Time

Central Pennsylvania shows little change in either production or prices. Loadings the third week in June were 12,477 cars, or 85 cars more than in the week ended June 12. Industrial buying is light. Pool 1 coal is quoted at \$2.30 @ \$2.60; pools 9 and 71, \$2 @ \$2.30; pool 10, \$1.80 @ \$2.10; pools 11 and 18, \$1.60 @ \$1.80.

There were few changes in the nominal quotations on the Buffalo bituminous market last week. Westmoreland lump and mine-run dropped from \$2.50 to \$2. Cambria County mine-run was firm at \$2.25. Fairmont lump dropped to \$1.30 @ \$1.45. Youghiogheny slack increased from \$1.35 @ \$1.55 to \$1.50 @ \$1.60. The maximum price on Pittsburgh and No. 8 slack declined a nickel. The Toronto retail and industrial bituminous markets are quiet and prices are somewhat easier.

The New England market offered nothing in the way of novelty the past week. Navy Standard coal was quoted at Hampton Roads at \$4.35 @ \$4.50, with most of the buying at the lower figures. Mine quotations on all-rail central Pennsylvania coals were unchanged.

#### Export Demand Felt in New York

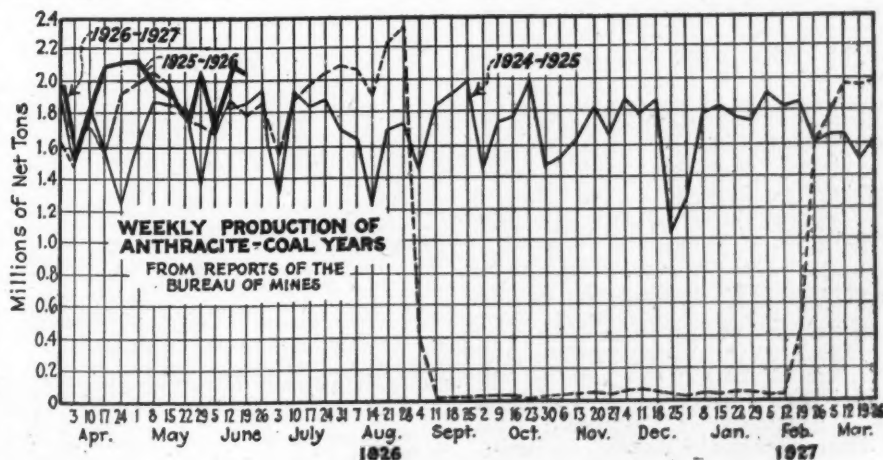
Export demand was the bright spot in the New York bituminous market the past week. Foreign buying also was the center of interest at Baltimore. Philadelphia, on the other hand, found nothing helpful to its local situation in existing conditions. At New York some of the smaller shippers had a chance to share in the export orders. The domestic market, however, was inactive. Tidewater receipts were slightly less than the preceding week and there was little distress coal for bargain hunters. Philadelphia traders are trying to encourage greater stocking of coal by

industrial plants. The success which has met this campaign, however, has not been great. The increased interest shown by foreign buyers in high-volatile coal has shattered some of the indifference heretofore shown by railroads. Prices are unchanged. During the first three weeks of June Baltimore loaded 154,554 tons of gas coal for foreign shipment, but increasing sales for export leave no mark upon domestic trade or prices.

The Birmingham market is experiencing a pronounced lull in buying. Contract shipments to industrials have been cut down 15 to 20 per cent. This has hampered the movement of high-grade domestic coal, for which there are few cancellations or requests to defer shipments. Except upon the cheaper grades of coal, quotations have not been revised downward. The opinion prevails that the slump will be of short duration. Third-quarter and last-half contracts for foundry coke are being made at \$5.50. Spot coke is \$6. There is a moderate demand for egg coke at \$5 and nut at \$3.50.

#### No Snap to Anthracite Trade

The majority of the anthracite operators are dissatisfied with the present rate of buying. Some companies are compelled to store chestnut as well as the steam sizes. Others are meeting the situation by curtailing production and to them a prolongation of the Fourth holiday will come as no hardship. New York retailers keep fairly busy with domestic deliveries. Stove is in the lead, with egg second. Pea is losing its popularity and nut is very backward. The same situation with



#### Car Loadings and Supply

	Cars Loaded All Cars	Coal Cars
Week ended June 12, 1926.....	1,060,214	177,477
Preceding week.....	945,964	155,094
Week ended June 13, 1925.....	987,196	157,559

	Surplus Cars All Cars	Coal Cars	Car Shortages All Cars	Coal Cars
June 15, 1926.....	268,778	76,071	.....	.....
June 7, 1926.....	270,841	79,013	.....	.....
June 14, 1925.....	362,961	169,133	.....	.....

respect to demand for the different sizes prevails at Philadelphia.

There has been no change in the steam coal situation. Barley maintains its position better than rice or buckwheat, but some storing of all sizes is necessary. On the whole prices are stronger at Philadelphia than at New York, not because Philadelphia demand is heavier but because the independents are moving their surplus output to the Manhattan market.

The independent anthracite trade at Buffalo is quiet and there is no pronounced local demand for company coal. The lake trade, however, has taken on new life. During the week ended June 24, 16 cargoes, carrying 111,500 tons, were cleared. Duluth and Superior took 50,900 tons; 27,600 tons cleared for Milwaukee, 13,200 tons for Chicago, 6,300 tons for Waukegan, 6,000 tons for Sheboygan, 5,500 tons for Fort William and 2,000 tons for Racine.

#### Coke Market More Active

The past week saw an increase in contracting for furnace coke in the Connellsville region, but the total volume was below preliminary estimates. There was little second-half business done at more than \$3 and less than that was accepted on third-quarter contracts. The spot market is weaker, and small accumulations are hard to move. Nominally the spot price is \$2.75, but tonnage probably could be picked up at \$2.60. Some second-half foundry coke contracts have been closed at \$4.50 @ \$4.75. Many foundries, however, are playing the open market at \$4 @ \$4.50.

Coke production in the Connellsville and Lower Connellsville region totaled 136,730 tons during the week ended June 19, according to the Connellsville Courier. Furnace oven output was 74,000 tons, a decrease of 4,100 tons when compared with the production for the preceding week. Merchant oven output —62,730 tons—increased 2,220 tons.

## Foreign Market And Export News

### French Collieries Profit By British Strike

Paris, France, June 17.—French collieries have been placed in a very favorable position by the continuance of the British strike. Not only have imports of English coal ceased but Holland has disappeared from the list of countries sending coal to these shores and there has been little additional tonnage received from Germany. French mines are endeavoring to meet home demands and retain a surplus for exportation.

In conjunction with Belgium, France is contributing somewhat to relieving the British fuel famine. This is a movement about which little is said publicly and some mines in the Sarre region categorically deny that they are sending coal to the British Isles. Railroad interests, however, admit that part of their rolling stock is being employed in moving French and Belgian coal to Antwerp for transshipment to Great Britain.

Under such conditions, home demand is extremely active and prices are rising. The first of the week, for example, Paris retailers increased the prices on Donetz anthracite cobbles 30 fr. Quotations on Belgian, Dutch and German anthracitic mixtures were advanced 20 to 70 fr.

### High Prices Hit Belgium

Brussels, Belgium, June 16.—The coal market is moving forward so rapidly that not even the British strike can be charged with complete responsibility for the upward swing in prices. As a matter of fact, speculative demands have brought about an exaggerated price basis and heavy overstocking by consumers who can foot the bills. Foreign competition as a check on rising domestic prices is out of the picture because of the exchange rate. Practically the only coal being imported is reparation fuel and that commands such high figures that the government may shut off shipments.

In some cases, excited industrial purchasing agents have ordered sufficient tonnage forward to run their plants for three months. This abnormal buying has taken some sizes and grades completely off the market. Lean beans are practically unprocurable. Semi-bituminous beans readily bring 95@100 fr. Coking smalls are 115@117.50 fr. and higher. Duffs for lime and brick-burning are very scarce and buyers have offered 6 fr. premium over the official price of 85 fr.

### German Coal Exports in April

Bituminous coal exports from Germany in April totaled 1,156,000 tons, of which 2,000 tons were sent to the United States, according to a cable to the Department of Commerce from Commercial Attaché Allport, at Berlin.

### Sharp Increase in Bituminous Coal Exports in May

Bituminous coal exports from the United States during May showed an increase of 422,463 gross tons over the figures for the month preceding. Compared with May, 1925, however, the increase was only 159,777 tons. Anthracite exports were 32,275 tons greater than in April, but less than 2,000 tons ahead of the total for May, 1925. Coke shipments were 80,260 tons, as compared with 54,912 tons in April and 58,637 tons in May, 1925. Bunker tonnage supplied to vessels engaged in foreign trade totaled 437,273 tons, as compared with 400,426 tons for the same month last year.

May exports by countries were as follows:

To:	Anthracite Gross Tons	Bituminous Gross Tons	Coke Gross Tons
France.....	31,523	.....	.....
Gibraltar.....	16,429	.....	.....
Iceland.....	4,211	.....	.....
Italy.....	66,194	.....	.....
Malta, Gozo, and Cyprus Islands.....	.....	5,352	.....
Netherlands.....	.....	5,892	556
Portugal.....	.....	35,762	.....
United Kingdom.....	321,185	993,479	76,801
Canada.....	39	5	.....
British Honduras.....	.....	51	9
Costa Rica.....	.....	84	.....
Guatemala.....	.....	409	.....
Honduras.....	.....	29,921	.....
Nicaragua.....	243	10,919	28
Panama.....	.....	4,052	.....
Mexico.....	.....	4,918	.....
Miquelon and St. Pierre Islands.....	.....	800	789
Newfoundland and Labrador.....	800	25	271
Bermuda.....	.....	18,136	.....
Barbados.....	.....	3,753	.....
Jamaica.....	.....	90	.....
Trinidad and Tobago.....	.....	30,582	34,570
Other British West Indies.....	.....	104	19
Cuba.....	.....	9,656	.....
Dutch West Indies.....	.....	8,125	.....
Dominican Republic.....	.....	20,065	.....
Dutch East Indies.....	169	6,249	.....
French West Indies.....	.....	94,055	2,072
Argentina.....	.....	60	54
Bolivia.....	.....	1,187	.....
Brazil.....	.....	300	.....
Chile.....	.....	22,129	.....
Colombia.....	.....	8	4
British Guiana.....	.....	3,052	.....
Dutch Guiana.....	.....	19,346	.....
Uruguay.....	.....	18,787	.....
Venezuela.....	.....	9,603	.....
Dutch East Indies.....	.....	1,493	.....
Egypt.....	.....	5,785	.....
Algeria & Tunis.....	.....	29,947	.....
Other French Africa.....	.....	.....	.....
Morocco.....	.....	.....	.....
Portuguese East Africa.....	.....	.....	.....
Canary Islands.....	.....	.....	.....
Total.....	327,077	1,516,710	80,263

May imports of bituminous coal totaled 27,507 gross tons, of which 2,062 tons were shipped from the United Kingdom and 25,445 tons from Canada. Anthracite imports dropped from 59,000 tons in April to 8,227 tons in May. Coke imports declined from 20,000 to 14,347 tons.

### Export Clearances Week Ended June 24 FROM HAMPTON ROADS

For United Kingdom:	Tons
Br. Str. Grelband.....	7,180
Dan. Str. Jacob Maersk.....	3,487
Ital. Str. Anfora.....	7,299
Br. Str. Drumrobin.....	7,995
Span. Str. Allobizkar Mendi.....	7,598

For Jamaica:	
Br. Str. Wilston, for Kingston.....	4,991
Br. Str. Uskmoor, for Port Royal...	3,645
For England:	
Grk. Str. Aristides L. Lorelandris..	5,631
Br. Str. Penlover, for Portsmouth..	5,666
Grk. Str. Meropi, for Liverpool.....	5,980
Br. Str. Fishpool, for Manchester...	6,999
Swed. Str. Australic, for Portsmouth.	5,981
Jap. Str. India Maru.....	7,481
For Nova Scotia:	
Nor. Str. Laly, for Halifax.....	1,975
For Brazil:	
Br. Str. W. I. Radcliffe, for Rio de Janeiro.....	7,873
Br. Str. Baxtergate, for Santos.....	6,884
Br. Str. Ramsay, for Rio de Janeiro.	7,874
For. Str. Amarante, for Rio de Janeiro.....	9,490
For Irish Free State:	
Ital. Str. Tagliamento, for Queens-town.....	7,453
Grk. Str. Melpo, for Queenstown.....	7,191
For Argentina:	
Br. Str. Bretwalda, for Buenos Aires	6,690
Nor. Str. Tercero, for Buenos Aires..	4,365
Br. Str. Trecarrell, for Buenos Aires	6,476
Br. Str. Magdala, for Buenos Aires..	6,370
For Martinique:	
Amer. Schr. T. N. Barnsdall, for Fort de France.....	1,882
For Newfoundland:	
Nor. Str. Matilda, for Botwoodville..	5,616
For Canada:	
Br. Str. Rassay, for Quebec.....	6,269
Nor. Str. Aslaug, for Gaspe.....	1,288
For Cuba:	
Dan. Str. Nordamerika, for Santa Lucia.....	1,983
Br. Str. Berwindmoor, for Havana...	9,657
For Portugal:	
Br. Str. Cairnhill, for Lisbon.....	5,638
For Canary Islands:	
Nor. Str. Hallgrim, for Las Palmas..	9,397
For Italy:	
Ital. Str. Laura C. for Trieste.....	2,487
For Uruguay:	
Grk. Str. Rokos Vergottis, for Montevideo.....	7,119
For Trinidad:	
Nor. Str. Cissy, for Port of Spain..	3,421

### FROM BALTIMORE

For Italy:	
Ital. Str. Atlantico for Venice.....	4,974
For France:	
Nor. Str. Otta, for Ushant or France.	4,798
For Costa Rica:	
Dan. Str., Amellenborg.....	4,011
For England:	
Ital. Str. Cor Jesu, for Liverpool...	5,640
Swed. Str. Murjek for Land's End for orders.....	6,900
For Irish Free State:	
Am. Str. Severance for Queenstown..	6,592
Br. Str. Chertsey for Dublin.....	5,499
Br. Str. Cogandale for Queenstown..	8,327

### FROM PHILADELPHIA

For New Brunswick:	
Am. Schr. Helvetia, for St. John....	—
For British Isles:	
Swed. Str. Conwallana, for Belfast..	—

### Hampton Roads Coal Dumpings\*

(In Gross Tons)

	June 17	June 24
N. & W. Piers, Lamberts Pt.: Tons dumped for week.....	135,272	174,821
Virginian Piers, Sewalls Pt.: Tons dumped for week.....	112,247	104,653
C. & O. Piers, Newport News: Tons dumped for week.....	213,747	209,276

\* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

### Pier and Bunker Prices, Gross Tons

PIERS	June 19	June 26†
Pool 1, New York....	\$5.40@5.65	\$5.40@5.65
Pool 9, New York....	4.90@5.15	4.90@5.15
Pool 10, New York....	4.60@4.85	4.60@4.85
Pool 11, New York....	4.35@4.50	4.35@4.50
Pool 9, Philadelphia..	4.85@5.20	4.85@5.20
Pool 10, Philadelphia..	4.60@4.85	4.60@4.85
Pool 11, Philadelphia..	4.30@4.55	4.30@4.55
Pool 1, Hamp. Roads.	4.50@4.55	4.50@4.55
Pool 2, Hamp. Roads.	4.35@4.40	4.35@4.40
Pool 3, Hamp. Roads.	4.10@4.20	4.10@4.25
Pools 5-6-7, Hamp. Rds.	4.50@4.60	4.50@4.65

### BUNKERS

Pool 1, New York....	\$5.65@5.90	\$5.65@5.90
Pool 9, New York....	5.15@5.40	5.15@5.40
Pool 10, New York....	4.85@5.10	4.85@5.10
Pool 11, New York....	4.60@4.75	4.60@4.75
Pool 9, Philadelphia..	5.10@5.35	5.10@5.35
Pool 10, Philadelphia..	4.90@5.10	4.90@5.10
Pool 11, Philadelphia..	4.55@4.85	4.55@4.85
Pool 1, Hamp. Roads.	4.60	4.60
Pool 2, Hamp. Roads.	4.40	4.40
Pools 5-6-7, Hamp. Rds.	4.60	4.65

† Advances over previous week shown in heavy type; declines in italics.



## Coming Meetings

**First-Aid Contest** for the championship of central Pennsylvania, at Fair Grounds, Ebensburg, Pa., July 5. Superintendent, H. D. Mason, Jr., Box 604, Ebensburg, Pa.

The West Virginia Mining Institute will hold its summer meeting July 13 and 14 at Bluefield, W. Va.

**Fourth Annual West Virginia First-Aid Contest and First Annual Safety Day**, Camden Park, Huntington, Va., Aug. 21. Managing Director, W. H. Forbes, Federal Building, Huntington.

**Fifth International First-Aid and Mine-Rescue Contest**, San Francisco, Calif., during the first week of September, 1926, under the auspices of the Bureau of Mines, Department of Commerce.

**American Institute of Mining and Metallurgical Engineers.** Oct. 6-9, at Pittsburgh, Pa. Secretary, H. Foster Bain, 29 West 39th St., New York City.

**National Safety Council.** Oct. 25-29, at Detroit, Mich. Managing director, W. H. Cameron, 108 East Ohio St., Chicago, Ill.

**Coal Mining Institute of America.** Annual meeting, Chamber of Commerce, Pittsburgh, Pa., Dec. 8, 9 and 10. Secretary, H. D. Mason, Jr., Box 604, Ebensburg, Pa.

## New Companies

Articles of incorporation of the Mount Shasta Coal Co. have been filed with the Secretary of State at Sacramento, Calif. The new company plans to develop coal deposits in the Oak Run and Round Mountain districts of Shasta County, Calif. An area of about 15,000 acres is controlled by the company. Several coal beds are said to have been cut in preliminary work. The company is capitalized for \$10,000,000 of which \$2,000,000 is preferred stock and \$8,000,000 common. The directors are Charles A. Dickey, of San Francisco; H. C. Morris, of Oakland; S. E. Biddle, of Piedmont; John A. McCandless, of Honolulu; A. F. Hockenbeamer, H. H. Fair, R. Ferbeck, E. L. Dow and John L. McNab, all of San Francisco.

D. S. Pratt & Son, Ltd., has been organized at Midland, Ont., and will carry on business as coal wholesalers, retailers and operators. The authorized capital is \$500,000.

The Green's Run Coal Co., Nelsonville, Ohio, has been incorporated with a capital of \$25,000 to mine and sell coal in the Nelsonville field. Incorporators are C. C. Sharp, D. N. Postlewaite, E. Hauck, P. H. Wessel and Edwin S. Pierce.

The Barnhill Coal Co., New Philadelphia, Ohio, has been chartered with a capital of 500 shares of no par value to operate coal mines, hold and deal in coal properties and sell coal and coke at retail. Incorporators are W. F. DeMuth, Helen DeMuth, Ruth M. Seyferth, R. F. Seyferth and John Marchesy, Jr.

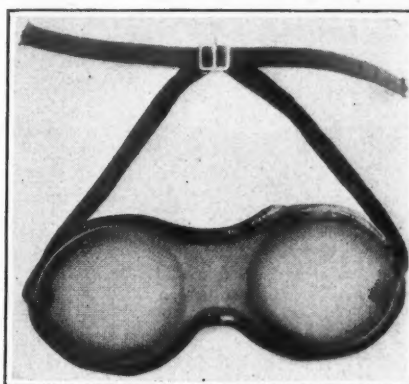
## New Equipment

### Unbreakable Eye Protection

In order to meet the demand for a device that will effectively protect the eye from injury by flying particles of coal or other material underground the Mine Safety Appliance Co., of Pittsburgh, Pa., has developed a wire-screen goggle.

This is made of strong steel wire of a color and mesh such as to avoid optical distortion. Inasmuch as the wire is close to the eye it has no other effect upon the sight than to merely darken the field of vision to a slight extent.

These goggles are said to be not uncomfortable to wear. The rim is leather-bound, and no metal parts come in contact with the skin. Because of its flexibility and the ready adjustment of the head band this goggle can be easily formed to fit the nose and face of the wearer. If deformed by a blow from flying coal it may be readily bent back into shape.



### Simple, Effective and Cheap

Flying particles may dent but cannot break these goggles. They may be readily bent back to shape after such an accident.

### Section Switch That Abuse Will Not Displace

In most mines it is highly advantageous to install section insulators so that the portions of the workings that are supplied with current through them may be completely isolated so far as the power is concerned. The accompanying illustration shows the new section insulator recently placed on the market by the Electric Railway Im-

provement Co. of Cleveland, Ohio. This switch has a double blade and as may be seen is supported at both ends by means of trolley hangers. The double blade assures excellent contact and large carrying capacity and the double support affords rigidity.

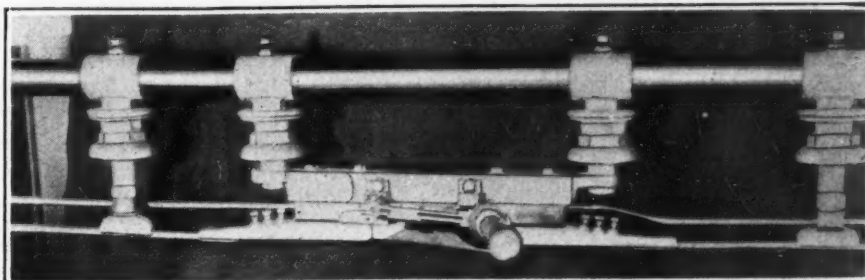
### Portable Recording Meters

Two new types of portable graphic recording instruments for use with alternating current have recently been placed on the market by the General Electric Co. These are known as types CP-4 and CP-5 respectively, the first being equipped with a clock and the second with a motor for driving the paper. Chart speeds of 1, 3, 6 or 12 in. per hour may be obtained and by a shift of gears this speed per hour may be made the speed per minute.

Both instruments are of high torque. Damping is unaffected by temperature and suffices for rapidly fluctuating loads. The pen points are driven with sufficient energy to minimize errors resulting from friction with the paper. The metering elements are protected from stray fields and the re-roll device cannot be damaged when the graph is removed. Both these instruments are small, light and of high voltage capacity. They have only slight internal losses.

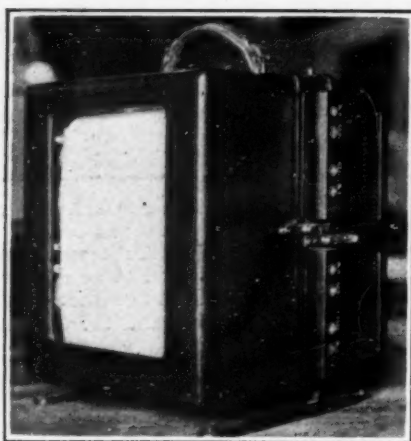
All parts of the new instrument are mounted on aluminum-alloy castings. The elements themselves are assembled on a cast-aluminum frame, making a complete unit. This frame carries the armature, field coils, core, shield, ink-well and pen. It, in turn, is mounted on a main frame to which are hinged the front and back covers forming the instrument case. The main frame also carries the chart carriage assembly, mercury damper, potential switch and terminals. The covers are of cast-aluminum alloy.

The potential resistance is mounted in two ventilated compartments in the rear cover and is separated from the instrument proper by Bakelite panels. The construction is such that the potential circuit is broken at the terminals when the rear cover is opened. Those operating the instrument are thus protected from high voltages. The



### Section Switch Well Anchored at Both Ends

It is claimed that no matter how hard a jerk the motorman or other underground worker may give the lever of this switch it will not be wrenched loose from its anchorage. The strong support at either end assures that it will "stay put" and in the position in which it was installed.



**Portable Curve-Drawing Meter**

Most of the parts entering into the construction of this new meter are of aluminum or one of its alloys. The entire instrument is, therefore, light enough to be readily portable, yet strong enough to endure all ordinary usage. By its use continuous and exact records of the performance of electrical machinery may be obtained.

chart carriage is hinged at the bottom and may be tilted forward, thus making it easy to install new charts. All parts of these instruments are easily accessible.

Instruments of this kind comprise ammeters, voltmeters and single- and poly-phase wattmeters. All of them are self-contained and the voltmeters and potential circuits for the wattmeters have ratings of 110, 220 and 550 volts. The ammeters and current circuits of the wattmeters are rated up to 20 amp.

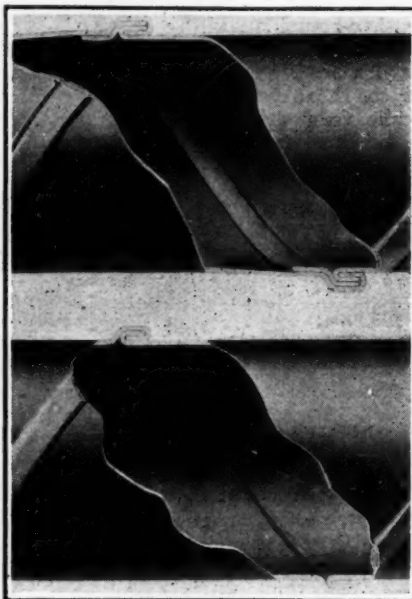
### Light But Unusually Strong Rivetless Spiral Pipe

Demand for a pipe of light weight that would, nevertheless, possess unusual strength and wearing qualities, was responsible for the development of the Naylor spiral lock-seam pipe shown in the accompanying illustration. In the construction of this equipment a strip of sheet steel is wound spirally around a machined mandrel and the edges flanged and folded over into a 4-ply lock-seam laid up on the outside of the pipe. The product thus formed is continuous, but may be cut into any desired lengths up to 40 ft. It may be made from sheets varying in thickness from No. 16 to No. 10 gage, and from 4 to 30 in. in diameter. Also it may be made plain or galvanized, painted or asphalted according to the use to which it is to be put.

In the conveyance of any fluid or other material, greatest efficiency is naturally obtained from pipe of unvarying diameter. In this product, as has been stated, the seam is not only dependable for tightness but affords great strength to resist distortion, this being, roughly, double that if the seam were not present. The interior surface also is entirely unobstructed. Furthermore, it is an easy matter in making this pipe to roll in an extra, narrow ribbon of steel, harder than that of which the walls of the pipe are composed, thus forming a wearing strip, which is useful if abrasive materials, such as ashes,

slimes, slush, and the like are to be handled. There are thus no rivets to wear or rust out, and the friction of the material handled is reduced to a minimum, as is also the power necessarily expended for the conveyance of the material.

Being of light weight and lower in first cost than most equipment of a similar nature, this pipe is particularly adapted to installation in places that are difficult of access. Not only will it serve to convey water in large volume over long distance, but it may also be employed as a ventilating tube underground, carrying the air to the working faces. It also finds application in washing, jigging, flotation and slushing operations where large quantities of liquid are to be conveyed and the material carried by it is highly abrasive in character.



**Cross-Sections of Pipe**

In the upper illustration may be seen the spiral lock-seam pipe with a wearing strip of high-carbon steel intended for handling abrasive materials. This extra strip is harder than the actual wall of the pipe and protects the wall shoulder along the seam from abrasion. In the lower illustration is the standard pipe intended for carrying non-abrasive fluids and materials. The whole thickness of the seam is on the outside of the pipe, leaving the interior entirely unobstructed.

### Recent Patents

**Method of and Apparatus for Cleaning and Conserving Hoist Cables;** 1,575,526. Karl Bocher, Brambauer, Germany. March 2, 1926. Filed May 5, 1925; serial No. 28,184.

**Coal-Cutting Machine;** 1,575,531. John C. Brackett, Phillipsburg, N. J., assignor to Ingersoll-Rand Co., Jersey City, N. J. March 2, 1926. Filed May 16, 1924; serial No. 713,700.

**Safety Apparatus for Use in Mines;** 1,575,626. Henry Waldemar Haapanen, Sturgis, Ky. March 9, 1926. Filed April 1, 1924; serial No. 703,497.

**Miner's Safety Lamp;** 1,575,636. Heinrich Meyer, Hiddesen, near Detmold, Germany. March 9, 1926. Filed March 21, 1925; serial No. 17,271.

**Coal Carburetor;** 1,565,674. David Wentworth Robb, Amherst, Canada. Dec. 15, 1925. Filed Jan. 19, 1923; serial No. 613,747.

**Transport System for Pulverized Coal;** 1,566,536. Fritz Hoving, Chicago, Ill., assignor to Raymond Bros. Engineering Co., Chicago, Ill. Dec. 22, 1925. Filed May 22, 1922; serial No. 562,853.

**Electric Mine Fuse;** 1,567,545. Nikolaus Schmitt, Niederlossnitz, near Dresden, and Otto Schmitt, Kuppersteg, near Cologne, Germany. Dec. 29, 1925. Filed June 23, 1924; serial No. 721,940.

**Miner's Lamp;** 1,567,682. Samuel T. Scoby, Frankfort Heights, Ill., assignor of one-half to Coleman L. Jones, Frankfort Heights, Ill. Dec. 29, 1925. Filed Aug. 12, 1922; serial No. 581,418.

**Electric Storage-Battery Locomotive;** 1,575,699. Raymond Mancha, St. Louis, Mo., assignor to Mancha Storage Battery Locomotive Co., St. Louis, Mo. March 9, 1926. Filed April 14, 1924; serial No. 706,432.

**Device for Greasing Hoisting Ropes or Cables;** 1,576,159. George Timmerman, Staunton, Ill. March 9, 1926. Filed July 20, 1925; serial No. 44,789.

**Pulverization of Coal;** 1,576,335. Henry Kreisinger, Piermont, N. Y., assignor to Combustion Engineering Corp., New York City. March 9, 1926. Filed Jan. 16, 1925; serial No. 2,718.

**Loader Conveyor;** 1,576,910. Wm. W. Hudson, Salt Lake City, Utah. March 9, 1926. Filed Feb. 18, 1925; serial No. 10,100.

**Mounting for Shaker Screens;** 1,577,310. Henry M. Sutton, Walter L. Steele and Edwin G. Steele, Dallas, Texas. March 16, 1926. Filed Dec. 3, 1923; serial No. 678,345.

**Mixing Bin;** 1,577,365. Clyde P. Ross, Chicago, Ill. March 16, 1926. Filed Feb. 5, 1923; serial No. 616,882.

**Lamp Holder for Miners' Caps;** 1,578,219. Frank K. Tovey, Pittsburgh, Pa., assignor to Union Cap Mfg. Co., Pittsburgh, Pa. March 23, 1926. Filed Nov. 13, 1924; serial No. 749,675.

**Forging Machine for Coal Cutter;** 1,578,500. Jesse Ditson, Littleton, Colo., assignor to Ingersoll-Rand Co., Jersey City, N. J. March 30, 1926. Filed Sept. 26, 1925; serial No. 58,722.

**Method for Removing Gas and Dust from Mines;** 1,578,814. Angelo D'Ascenzo, Denver, Colo. March 30, 1926. Filed April 3, 1925; serial No. 20,504.

**Low-Coal Conveying Device;** 1,582,411. Wm. H. Lesser and Russell L. Suender, Frackville, Pa. April 27, 1926. Filed Feb. 18, 1925; serial No. 10,108.

**Flotation Machine;** 1,574,403. Stephen E. Meyer, Hayden, Ariz. Feb. 23, 1926. Filed Oct. 24, 1924; serial No. 745,624.

**Portable Unloading Machine;** 1,574,831. Wm. E. S. McCormick, Rush Run, W. Va. March 2, 1926. Filed April 4, 1924; serial No. 704,187.

**Mining-Machine Chain Link and Bit;** 1,575,315. Newton K. Bowman, Bowdil, Ohio. March 2, 1926. Filed Jan. 21, 1922; serial No. 530,917.

**Coal Cutter and Loader;** 1,575,431. Nils D. Levin, Columbus, Ohio, assignor to the Jeffrey Mfg. Co., Columbus, Ohio. March 2, 1926. Filed Sept. 11, 1918; serial No. 253,632. Renewed July 31, 1925.